

**Village of Oakfield
Wastewater Treatment Facility
Proposed Connection of STAMP Force Main
Basis of Design Report**

**For The
Genesee County Economic Development Center**

**June 2024
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Acronyms

10SS	Ten States Standards
BOD ₅	5-day biochemical oxygen demand
FM	Force main
GCEDC	Genesee County Economic Development Center
GEIS -	Generic Environmental Impact Statement
CPD -	Gallons per day
HDD -	Horizontal directional drilling
HDPE -	High-density polyethylene pipe
ICEAS -	Intermittent Cycle Extended Aeration
MGD -	Million gallons per day
MOU -	Memorandum of Understanding
MPS -	Main pump station
NYSDEC -	New York State Department of Environmental Conservation
PLC -	Programmable Logic Controller
SBR -	Sequential Batch Reactor
SEQR -	State Environmental Quality Review Act
SGIS -	Smart Growth Impact Statement
SHT -	Sludge Holding Tanks
SPDES -	State Pollutant Discharge Elimination System
STAMP -	Western New York Science & Technology Advanced Manufacturing Park
TDH -	Total dynamic head
TKN -	Kjeldahl nitrogen
TP -	Total phosphorus
TSS -	Total suspended solids
USFWS -	U.S. Fish and Wildlife Service
VFD -	Variable frequency drive
WWTF -	Wastewater Treatment Facility

I. General

A. Background

The Genesee County Industrial Development Agency d/b/a/ the Genesee County Economic Development Center (GCEDC) and its affiliate, the Genesee Gateway Local Development Corporation (GGLDC), have been working for the last twenty plus years on the development of the Western New York Science & Technology Advanced Manufacturing Park (STAMP). The Site is planned as an advanced manufacturing campus on approximately 1,262 acres of land in the Town of Alabama, New York located along the west side of New York State Highway 77/63 (north of Judge Road) approximately five miles north of the I-90/New York State Thruway (STAMP Site).

At full build out, STAMP will be a high technology campus with the potential to accommodate over 6 million square feet of advanced technology manufacturing and related uses and to create up to 9,330 jobs. The GCEDC, as lead agency pursuant to the State Environmental Quality Review Act (SEQR), prepared a Generic Environmental Impact Statement (GEIS) and a Smart Growth Impact Statement ("SGIS") that analyzed the potential impacts of STAMP pursuant to the requirements of the SEQR and the State Smart Growth Public Information Policy Act.

In January 2012, the Final GEIS for STAMP was accepted as complete. The FGEIS identified alternatives for wastewater treatment for STAMP and assumed a maximum of 3 million gallons per day (MGD) of sanitary discharge would be needed. The preferred treatment alternative at that time included an onsite Wastewater Treatment Facility (WWTF) with a discharge to either Oak Orchard Creek, Whitney Creek or Tonawanda Creek. Based on feedback received during the GEIS process, several meetings with the neighboring Tonawanda Seneca Nation (Nation), and changes in the development of the STAMP Site to focus on the semiconductor industry, new alternatives for treatment were developed.

In August of 2013, a Conceptual Water and Wastewater Alternatives Analysis and Recommendations Report identified potential sanitary sewage conveyance and treatment options for the STAMP project, including 1.0 million gallons per day (MGD) of sanitary sewer effluent and 11.0 MGD of industrial process wastewater. Based on this report, the Village of Medina (Medina) Wastewater Treatment Facility (Medina WWTF) was selected as the preferred sanitary sewer effluent treatment alternative.

The Nation voiced concerns with discharging effluent to Whitney Creek which flows into the Tonawanda Creek. The Tonawanda Creek flows through the Nation and it is an essential part of their cultural heritage. Another concern expressed by the New York State Department of Environmental Conservation (NYSDEC) was discharges to Whitney Creek and how that could affect the hydrology of the Tonawanda Wildlife Management Area. By utilizing the Medina WWTF and connecting to an established collection system, potential effects associated with discharging to Whitney Creek or directly to Tonawanda Creek could be avoided.

A Memorandum of Understanding (MOU) was developed between Medina and the CCEDC which outlined the process of analyzing potential discharge routes through the Village, analyzing potential capacity upgrades at the Medina WWTF, and overall project implementation and ownership. However, in May 2017, the MOU expired, and Medina declined to renew it. Therefore, other means of wastewater disposal were deemed necessary. Additionally, by utilizing onsite recycling for the industrial process water, the overall potential total volume of wastewater has decreased significantly from 12 MGD to 6 MGD, causing a change in the proposed treatment methods and discharge location. More importantly, as noted in the 2013 Conceptual Water and Wastewater Alternatives Analysis and Recommendations Report, the need for a potential future large diameter force main “big sewer” for the disposal of process water is no longer needed.

With a reduced wastewater discharge maximum requirement of 6 MGD, onsite wastewater treatment alternatives were once again considered feasible. Offsite effluent discharge locations were reviewed and analyzed as part of an ongoing effort to minimize environmental impacts and overall project costs for the wastewater solution. The review included input from the NYSDEC. In 2019, Oak Orchard Creek near NYS Route 63 in the Town of Shelby, just north of the Iroquois Wildlife Refuge (INWR), was determined to be the preferred discharge location. In 2020, STAMP Sewer Works, Inc. (SSW), a sewage-works corporation incorporated under Article 10 of the Transportation Corporations Law, was formed to construct and operate the proposed wastewater system.

Several layout options were considered for an onsite WWTF, onsite pump station, and offsite discharge location. On September 2, 2022, SSW received the State Pollution Discharge Elimination System (SPDES) permit for the STAMP Onsite Wastewater Facility and the construction of the force main discharge to Oak Orchard Creek in the Town of Shelby, Orleans County, New York (OOC Force Main). Construction of the force main to Oak Orchard Creek through INWR also required a right of way permit from U.S. Fish and Wildlife Service, which was granted in 2020, as well as the use of the state Eminent Domain Procedure Law to obtain easements necessary for construction.

In July of 2023 the SSW began construction of the force main through the INWR. During the design and permitting process of the WWTF and the construction of the force main, a second tenant, Edwards Vacuum, decided to settle at STAMP. Coupled with construction challenges with installing the force main through the INWR and low flow design points at the WWTF, as well as uncertainty resulting from legal challenges of the force main brought by Orleans County and the Nation, SSW decided to investigate the Village of Oakfield (Oakfield) WWTF as a sanitary sewer discharge option.

Initial average daily sanitary sewage flows from STAMP are anticipated to be 20,000 gallons per day (Plug Power, Edwards and a future project). A new onsite pump station at the STAMP site will be constructed to pump the sanitary wastewater generated by the manufacturing tenants through a force main (FM) to the Oakfield system.

The Oakfield WWTF currently has available capacity. The Oakfield WWTF's last major upgrade was in 2018-19, based on recommendations in the *"Village of Oakfield Wastewater Collection and Treatment Study and Engineering Report"*, Revised May 31, 2017, prepared by Mountain Engineering, PLLC. That capital improvement project was successful in improving the treatment process and the effectiveness of the plant operations, while meeting permit requirements. Mountain Engineering subsequently prepared a *"Village of Oakfield Wastewater Collection and Treatment Facility Needs Study Phase 2"*, Revised February 18, 2022; the focus of the Oakfield WWTF review in that study was to improve the remaining aging components of the facility, not the treatment effectiveness or capacity. The problems related to the Oakfield WWTF indicated in that study included moderate structural mechanical and electrical deficiencies. The moderate structural, mechanical, and electrical deficiencies are mainly the result of exceeding the expected useful life of the respective wastewater treatment components. Not all identified WWTF improvements were completed in the last capital project. Much of the background information contained in this current report has been taken directly from the two Mountain Engineering reports and 2018-19 project As-Built Drawings.

Pumping the sanitary sewage for existing and currently-proposed STAMP tenants (Plug Power, Edwards and a future project) to the Oakfield WWTF will allow for initial development at the STAMP site with no capacity upgrades needed to the Oakfield WWTF. Upgrading the Oakfield WWTF to improve phosphorus removal (discussed below) will provide benefits to both STAMP and Oakfield. It should also be noted that NYSDEC previously approved hold-and-haul of sanitary sewage from Plug Power, one of the initial STAMP tenants, to the Oakfield WWTF.

Oakfield, GCEDC, and SSW have executed a letter of intent (LOI) to summarize key terms upon which they would be willing to work together on the possible design, construction, and operation of the new force main sewer from the STAMP site to the Oakfield WWTF to provide wastewater treatment service to STAMP. The LOI is included in Appendix M.

B. Purpose

This report will outline the general improvements required at the Oakfield WWTF, with the basis of design for the equipment and treatment processes to be further developed as the project progresses. All work will be designed within the accepted criteria of the Recommended Standards for Wastewater Facilities, 2014 Edition (commonly referred to as the "10 States Standards") and TR-16 Guides for the Design of Wastewater Treatment Works, 2016 Revision (referred to as "TR-16"). All work will be subject to review and approval by the Village of Oakfield.

This report will also outline the design of the force main (FM), the main pump station (MPS), the Ham Road intermediate pump station (IPS), and the North Pearl Street Intermediate pump station (IPS) which will convey and discharge raw sanitary sewage to the Village of Oakfield WWTF. All work was designed within the accepted

criteria of the Recommended Standards for Wastewater Facilities, 2014 Edition (commonly referred to as the “10 States Standards”) and TR-16 Guides for the Design of Wastewater Treatment Works, 2016 Revision (referred to as “TR-16”).

Oakfield Wastewater Treatment Facility

II. Project Information

A. Site Location

A USGS location map of the STAMP site is shown in Figure 1, and a regional map for the force main routing from STAMP to Oakfield is shown in Figure 2. A map depicting the Oakfield Sanitary Sewer Collection System is shown in Appendix A. The manholes are labeled by number and the gravity sewer mains are shown by pipe size.

A layout plan of the Oakfield WWTF site with approximate property boundaries is shown in Figure 3, and a general site plan from the 2018 As-Built Drawings is shown in Figure 4. The Oakfield WWTF is located in the Northeast quadrant of the Village at the end of Irving Parkway.

B. Site Information

1. Soils

The Oakfield WWTF is situated on relatively flat elevations. The WWTF site soils are classified as moderately well drained and consisting mainly of silty loam. The average depth to the water table in Oakfield is two to five feet with bedrock averaging over seven feet.

2. Floodplain

The Oakfield WWTF is outside the 500-year floodplain and there is no evidence of flooding at the WWTF. The only 100-year floodplain lies over the existing small tributaries running through Oakfield and adjacent to the Oakfield WWTF. Downstream of the Oakfield WWTF lies an abundance of state and federal wetlands, including those contained within the Iroquois National Wildlife Refuge and the Oak Orchard Wildlife Management Area.

3. Environmental Resources Present

The environmental resources present in the project location are as follows:

- a. Streams Class C 847-694, 847-693
- b. New York State Wetlands. 18.9 Acres "OK-14"

4. Environmental Justice Area

There are no environmental justice areas in the Village or Town of Oakfield.

C. Population Trends

Growth in Oakfield has remained flat over the past two decades with current population from 2020 Census figures at 1,812, essentially the same as the 2010 Census figure at 1,813. Projected population for the year 2030 would be anticipated to remain at 1,812 based on current residential growth patterns within the Village, subject to the below qualifications.

There is growth potential in Oakfield and surrounding communities as a result of the STAMP project, as well as potential for connecting existing housing in the Town of Oakfield to the Oakfield sanitary sewer system. However, there are currently no firm plans for this. Accordingly, no additional flows (beyond existing permitted flows) have been included at this time for the purposes of evaluating the Oakfield WWTF's ability to accept flows from the STAMP initial development.

D. Existing Users

The existing Wastewater Collection and Treatment Facility is located in Oakfield and provides treatment for the Village including several users in the Town of Oakfield, namely the Oakfield Alabama Central School District, several residents and a few businesses. The collection facility also receives domestic waste from the Bonduelle USA, Inc. vegetable processing facility located within Oakfield but does not receive any of its process waste.

E. SPDES Permit Conditions and Limitations

A copy of the existing State Pollution Discharge Elimination System (SPDES) permit is included in Appendix B. The discharge limits under the SPDES permit based on average permitted flow of 0.5 mgd are listed in Table 1. A review of the facility's historical treatment results shows that the facility is consistently meeting these permit limits; effluent charts for February 2019-January 2024 are included in Appendix C. The facility generally operates at an efficiency of 95-99% based on removal of suspended solids and carbonaceous oxygen demand.

As indicated in the 2017 Mountain Engineering report, NYSDEC has indicated that in the future, additional or modified discharge limits for ammonia and phosphorus could be required. NYSDEC also had made note that the Village's I/I may need to be investigated.

Table 1 SPDES Permit Limits		
Parameter	All Year	Per Event for Flows >0.5MGD and micro screen used
Flow (30-day arithmetic mean)	0.50 mgd	N/A
Dissolved Oxygen (Daily Minimum)	7.0 mg/L	7.0 mg/L
Carbonaceous Biological Oxygen Demand (CBOD5) (Daily Maximum)	5.0 mg/L and 21.0 lbs/day	15.0 mg/L
Suspended Solids (SS) (Daily Maximum)	10.0 mg/L and 42.0 lbs/day	15.0 mg/L
Ammonia (as NH3-N) (Daily Maximum)*	15 mg/L*	2.0 mg/L*
pH (range)	6.0 to 9.0	6.0 to 9.0
Settleable Solids (Daily Maximum)	0.1 mL/L	0.3 mL/L
Effluent Disinfection Required	Seasonal from May 1 to Oct. 31	All Year
*Note: It is understood that the Ammonia limits included in the SPDES permit for the “All Year” and “Per Event for Flows >0.5 MGD and micro screen used” conditions, as indicated above, were incorrectly reversed and should be 2.0 mg/L “All Year” and 15.0 mg/L “Per Event for Flows >0.5 MGD and micro screen used”.		

III. Flows and Organic Loads

A. Hydraulic Capacity

1. Design Average Flow

Design Average Flows are discussed below and presented for various flow scenarios in a table in Appendix D.

a. Existing WWTF Flows

The Oakfield WWTF is currently operating under a NYSDEC permitted 30-day average flow capacity of 0.50 mgd.

The 2017 Mountain Engineering report indicated for the period January 2010 through December 2014:

Since January 2010, the average daily flow to the facility during summer months (June through October) is 0.143 mgd. During winter months (November through May), the average daily flow is 0.166 mgd. The highest monthly average daily flow during this period was 0.275 mgd. The overall annual average daily flow is 0.160 mgd. A summary of these flow averages is shown after Table 2. Based on the above flows, the current daily flow is considered to be 0.160 mgd for this report.

Some reductions in I/I are likely over a 20-year period. Results from the 2015 Sewer System I/I Evaluations, see Appendix E, concluded that I/I accounted for nearly 50,000 gpd of additional flows to the Village treatment facility. It is anticipated that over a 20-year period that can be reduced by 50% or 25,000 gpd, by completing improvements to the existing collection system and continued investigations as well as enforcement of the Village's sewer ordinance.

Data for the 5-year period from January 2019-December 2023 was obtained from the USEPA ECHO website and WWTF monthly operating reports. During this period, the average daily flow to the facility during summer months (June through October) was 0.104 MGD. During winter months (November through May), the average daily flow was 0.144 MGD. The highest monthly average daily flow during this period was 0.215 MGD. The overall annual average daily flow was 0.127 MGD. A flow chart is included in Appendix C. Based on the above flows, the current average daily flow is considered to be 0.127 MGD, which we have rounded to 0.130 MGD. It is noteworthy that while the Oakfield population has remained static, the summer, winter, and overall average daily flows, as well as the maximum month average daily flow, have decreased since the 2010-2014 data.

b. Additional Flows from STAMP

Initial Build design average flow for the STAMP site was estimated at 20,000 gpd, including approximately 9,000 gpd from currently committed businesses Plug Power and Edwards Vacuum, and an additional approximately 11,000 gpd from a future project. These flows are based on the projected number of employees and assumptions indicated in the Design Average Flows table in Appendix D.

2. Design Maximum Day Flow

a. Existing WWTF Flows

Data from the WWTF's monthly operating reports was analyzed for the 5-year period from January 2019-December 2023. The maximum daily flow for this period was 0.876 MGD, which corresponded to a severe rain event of 3.2". All but the highest six flow days were less than 0.5 MGD.

b. Additional Flows from STAMP

A peaking factor of 2.0 has been applied to the Design Average Flow, yielding a maximum day flow of 0.040 MGD.

3. Design Peak Hourly Flow

a. Existing WWTF Flows

Peak hourly flows could not be determined from the Oakfield WWTF's circular flow charts, as those charts have a maximum value of 1.0 MGD. However, it is known that the facility has experienced peak instantaneous flows more than 1.547 MGD, which is the maximum flow that the Oakfield WWTF flowmeter will measure; this value was reached on 5 days in the 5-year period from January 2019-December 2023, and it is assumed that the peak instantaneous flow on these days exceeded 1.547 MGD. Since the average daily flows have declined since the 2010-2014 data used for the 2017 Mountain Engineering report, to be conservative the peak hourly flows indicated in the 2017 Mountain Engineering report have been utilized. That report indicated the following:

In sanitary sewer collection systems with very little inflow/infiltration, peak hourly flows occur in conjunction with maximum water usage within the service area. Peak hourly flows are estimated by applying a peaking factor to the average daily flow. Based on "Recommended

Standards for Wastewater Facilities, 2014 Edition”, a community the size of Oakfield is expected to have a peaking factor of approximately 3.6. The facility’s operators have indicated that between 6:00 a.m. and 10:00 a.m., flow to the facility, at times, can increase by a factor of approximately 2.0. The peak (instantaneous) flow due to wet weather events is as high as 1.547 mgd. This report will conservatively use a peaking factor of 4.0.

The Mountain Engineering report applied this peaking factor of 4.0 to the packaged treatment plant’s original design flow of 0.340 MGD to arrive at a design peak hourly flow of 1.360 MGD when the facility is operating at a design average flow of 0.340 MGD. To be conservative, we have assumed this peak hourly flowrate of 1.360 MGD also for the existing flows (average daily flow 0.127 MGD).

c. Additional Flows from STAMP

A peaking factor of 4.0 has been applied to the Design Average Flow, yielding a peak hourly flow of 0.080 MGD.

4. Design Peak Instantaneous Flow

a. Existing WWTF Flows

The facility has experienced and is currently able to handle peak flows more than 1.547 MGD, which is the maximum flow that the Oakfield WWTF flowmeter will measure; this value was reached on 5 days in the 5-year period from January 2019-December 2023, and it is assumed that the peak instantaneous flow on these days exceeded 1.547 MGD. These extreme peak instantaneous flows with a peaking factor of over 12x the average daily flow is due to extreme rainfall events (ranging from 1.9” to 3.2” of rainfall). The 2010-2014 data used for the 2017 Mountain Engineering report also indicated peak instantaneous flows as high as 1.547 MGD during wet weather events and used a design instantaneous flow of 1.60 MGD when the facility is operating at a design average flow of 0.340 MGD. To be conservative, we have assumed this peak hourly flowrate of 1.60 MGD also for the existing flows (average daily flow 0.127 MGD).

b. Additional Flows from STAMP

Peak instantaneous flows from STAMP to the Oakfield WWTF have been assumed to match the peak hourly flow of 0.080 MGD. While the instantaneous flows at the point of connection of the STAMP force main to the Oakfield sanitary sewer system will be higher and equivalent to the pumping rate in the STAMP force main, these flows will be of

intermittent and short duration and will have flattened by the time they reach the Oakfield WWTF.

5. Design Flow Summary

The design flows to be used for this report are summarized below. Note that these flows do not account for any additional I/I reduction from the Village's collection system.

Table 2 Design Flows		
	Flow Scenario 1 Existing Flows (MGD)	Flow Scenario 2 Existing Flows + STAMP Initial Build (MGD)
Design Average Flow	0.130	0.150
Maximum Day Flow	0.876	0.916
Peak Hourly Flow	1.360	1.440
Peak Instantaneous Flow	1.600	1.680

B. Design Loadings

Influent strength sewage testing data from January 2019 through December 2023 has been used to determine the current influent organic loadings for Carbonaceous Biochemical Oxygen Demand (CBOD₅), and Suspended Solids. The Oakfield WWTF does not sample for influent TKN or phosphorus. However, sampling data from 2010-2014 included in the 2017 Mountain Engineering report indicated ammonia values in the 40 mg/L range, which we have utilized for the existing TKN condition. The average loadings are summarized as follows:

Table 3 Existing Loadings (Jan. 2019-Dec. 2023) Average Daily Flow = 0.130 MGD		
Parameter	Concentration (mg/L)	Loading (lbs/day)
CBOD ₅	190	206
Suspended Solids	192	208

The sanitary wastewater produced at the STAMP Site is anticipated to have typical sanitary wastewater characteristics. For flows above the existing average daily flow, the additional flow component was assumed to have concentrations of 250 mg/L for BOD₅, 250 mg/L for TSS, 50 mg/L for TKN, and 7 mg/L for total phosphorus. The below table summarizes the design conditions:

Table 4 Design Loadings		
Parameter	Flow Scenario 1 Existing Flows (0.130 MGD)	Flow Scenario 2 Existing Flows + STAMP Initial Build (0.150 MGD)
	mg/L(lbs/day)	mg/L(lbs/day)
BOD ₅	190 (206)	198 (248)
TSS	192 (208)	200 (250)
TKN	40 (43)	41(52)
TP	7 (8)	7 (9)

IV. Impact On Existing Wastewater Facilities

The Oakfield WWTF includes a screening and grit removal building, flow splitting structure, packaged wastewater treatment units, ultraviolet (UV) disinfection, sludge drying beds, reed bed sludge treatment system, control building, a wet weather treatment system (micro-screen), and a storage barn.

The existing wastewater treatment facility layout, general site plan, process flow diagram, and hydraulic profile are shown in Figures 3, 4, 5, and 6, respectively.

The existing collection and treatment facility was originally constructed in 1927. Four separate reconstruction/improvement projects were completed at the Oakfield WWTF in 1938, 1979, 1989, and 2019.

Most of the facilities are from the 1979 Upgrade. The 1989 improvements included the addition of a wet weather bypass treatment screening system and replacement of the aeration system for the package treatment plant units.

The 2019 improvements included a new headworks building (screening and grit removal), a pole barn roof over a portion of the package treatment plant units, ultraviolet disinfection structure, and enclosed sludge drying beds. The aeration blowers for the packaged treatment plant units were replaced in 2022.

The Oakfield WWTF is operated by a contract operator (Camden Group).

The 2022 Mountain Engineering report reviewed each component of the Oakfield WWTF regarding deficiencies and potential improvements to the remaining aging components not addressed in the 2019 capital project. The 2022 report recommendations were reviewed with Camden Group and Mountain Engineering staff in the preparation of this report, and all of the recommendations still apply and are included below, with the exception of a couple of items which have been addressed.

Conversations with Camden Group have indicated that everything at the Oakfield WWTF is working well currently, with the biggest operational issues being Inflow/Infiltration and sludge disposal.

A. Site

The 2022 Mountain Engineering report indicated the following:

- a) Several improvements are needed at the wastewater treatment facility to address deteriorating structures that are contributing to structural and safety issues including:*
 - 1. Painting;*
 - 2. Miscellaneous repairs.*

B. Screening and Grit Removal

The existing headworks facility was constructed in the 2018/19 construction project, and includes a mechanical bar screen, Pista Grit vortex grit removal system, and grit dewatering and screw conveyor unit. The headworks facility was designed for a peak hourly flow of 1.6 MGD and peak instantaneous flow of 3.0 MGD.

No improvements are required to the headworks facility.

C. Secondary Influent Structure

The 2022 Mountain Engineering report indicated the following:

- a) This influent structure was constructed in 1979 and requires maintenance and process upgrades:*
 - 1. Concrete repairs and protective coatings;*
 - 2. Grating replacement;*
 - 3. Install better bypass flow control;*

D. Process Flow Splitter

The 2022 Mountain Engineering report indicated the following:

- a) This structure was replaced in 1979 and needs minor repairs including:*
 - 1. Minor concrete repairs and protective coatings;*
 - 2. Install concrete nosing at center column.*

Modifications to improve flow distribution are recommended, as flow distribution is imbalanced more heavily toward the east packaged treatment plant. Installation of the concrete nosing at the center column should improve this condition.

E. Packaged Wastewater Treatment Units

The two packaged wastewater treatment units were constructed in 1979. The 1979 Design Criteria (included in Appendix E) indicates the facility was designed for an average dry weather flow of 0.34 MGD and that flows of 1.10 MGD can be handled without the flooding of any control weirs or taxing the hydraulic capacity of flumes, piping, etc.

The aeration system was replaced in 1989, converting the system from coarse bubble diffusers to fine bubble diffusers. The 1989 engineering report with design criteria for the aeration system replacement is also included in Appendix E.

A review of the existing design indicated that the packaged wastewater treatment units appear to be sized correctly based on the current Ten States Standards and TR-

16 for the original design of 0.34 MGD average daily flow and 1.10 MGD peak hourly flow, with the following possible exceptions noted:

- Return sludge pumps: The 1979 design indicates a sludge return rate of 100%, whereas Ten States Standards indicates a maximum return sludge rate of 150% of design average flow for single-stage nitrification processes.
- Clarifiers: The existing clarifiers were designed with a surface overflow rate of 960 gpd/SF at the peak hourly flow of 1.1 MGD, which is less than the maximum of 1,000 gpd/SF specified by Ten States Standards. However, when chemical addition is utilized for phosphorus removal to a required concentration of less than 1.0 mg/L, the maximum surface overflow rate specified by Ten States Standards is 900 gpd/SF, which would equate to a peak hourly flow of 1.03 MGD. The presence of tertiary filters following the clarifiers may mitigate this requirement, however.

A pole barn roof was constructed in the 2018/19 capital project over half of each of the packaged wastewater treatment units, the half that includes the bulk of the equipment exposed to weathering.

The 2022 Mountain Engineering report indicated the following (additional comments based on our review have been added without italics):

- a) *Several components of the aeration tank, clarifier, filters, and post aeration tank require maintenance or replacements from its construction in 1979.*
 1. *Structural repair to steel or concrete;*
 2. *Replace process equipment at aeration tank (new air diffusers);* Camden Group noted that if the blowers shut down for any period of time, the air headers in the tanks fill with wastewater.
 3. *Replace process equipment at center clarifiers (repair rake arms, replace gear drives and wells);*
 4. *Replace process equipment at sand filters (media, controls systems and repairs to steel and coatings);* Camden Group staff indicated that the existing media is 5' of anthracite and 1' of sand, and also noted that Filter A has a broken pipe.
 5. *Replace aeration system and effluent box at Post Aeration tank;*
 6. *Provide phosphorus removal if required by NYSDEC in the future*
 7. *Replace weirs and repair clarifier; (Weir fastening hardware has been recently replaced with stainless steel hardware)*
 8. *Complete minor repairs to steel for treatment tanks;*
 9. *Repair deteriorated concrete at treatment tanks.*

Camden Group indicated that it would be beneficial to extend the pole barn roof over the remainder of the two packaged wastewater treatment units, noting in particular that the west unit experiences problems with algae growth.

F. Control Building

This building was built in 1979. The process blowers for the packaged wastewater treatment units were replaced in 2022, and the emergency generator for the Oakfield WWTF was also recently replaced.

The 2022 Mountain Engineering report indicated the following (additional comments based on our review have been added without italics):

- a) This building was built in 1979 and requires updates and modifications. These improvements will provide opportunities for energy savings:*
 - 1. Update lab/office equipment and monitoring and alarming systems;*
 - 2. Replacement of blowers and electrical will provide energy savings; (Blowers have been replaced as noted above)*
 - 3. Replacement of lighting, windows and doors will provide energy savings.*

G. Ultraviolet Disinfection

The UV facility was constructed in the 2018/19 capital project and utilizes horizontal UV lamp modules in an open channel configuration. The UV system is designed for a minimum flow of 0.10 MGD, average flow of 0.35 MGD, and peak flow 1.60 MGD with full disinfection. The system, channel, and weir are designed to hydraulically pass an instantaneous peak flow of 3.00 MGD without overtopping the channel.

No improvements are needed to this facility.

H. Wet Weather Treatment System – Micro Screen

This facility was constructed in 1989. The 1989 Engineering Report for the Aeration System Improvements indicated that the Oakfield WWTF “has an average daily flow of approximately 0.25 million gallons per day (MGD), with wet weather flows up to 2.0 MGD during peak conditions. Currently a Wet Weather Treatment System is being constructed which will treat raw sewage in excess of 0.500 MGD.” This implies a peak flow capacity for the Wet Weather Treatment System of at least 1.5 MGD.

The 2022 Mountain Engineering report indicated the following:

- a) This installation occurred in 1989 but needs upgrading the original equipment and budgeting for future improvements including:*
 - 1. Replace and provide enclosure for micro screen panel boxes and controls;*
 - 2. Repair infiltration;*

I. Reed Bed Sludge Treatment System

The two (2) reed beds were constructed in 2010, with the intention that sludge would periodically be dredged and land applied on neighboring fields. Subsequent NYSDEC regulations dictated that the Village would no longer be able to land apply the sludge planted with Reed plants, requiring costly landfill disposal. Consequently, supplemental alternatives were evaluated in the 2017 Mountain Engineering report, resulting in the construction of new sludge drying beds as outlined below. Since the construction of the sludge drying beds, the reed beds have seen significantly less use. Both beds need to be dredged and the processed sludge/soil removed and disposed of. The west reed bed has been out of service for some time and could be cleaned immediately.

J. Sludge Drying Beds

The two (2) sludge drying beds were constructed in the 2018/19 capital project, in two separate enclosed and vented buildings. Information provided by Mountain Engineering (included in Appendix F) indicates that the total bed capacity was sized based on sludge production quantities from 2015-2016, which should be approximately the same or slightly less in 2024 due to the reduction in influent flowrates.

K. Storage Barn

The storage barn was constructed in the 1980s. The barn holds DPW equipment, and approximately 1/3 of the barn is used for dried sludge storage.

The 2022 Mountain Engineering report indicated the following:

- a) This building was constructed in the 1980's and requires repairs to address structural issues and can benefit from energy savings.*
 - 1. Grout undermining foundation;*

L. General

The 2022 Mountain Engineering report indicated the following:

- a) Miscellaneous improvements to be considered at the treatment plant.*
 - 1. Groundwater pumping/monitoring system;*
 - 2. Provide spare equipment, pump valves, motors, etc.*

M. WWTF Outfall Line

The existing Oakfield WWTF outfall line was constructed circa 1989 and consists of approximately 3900 LF of 18" gravity sewer with manholes, running northward from the WWTF to an outfall structure at Oak Orchard Creek. Mountain Engineering provided a hydraulic analysis of this line at a peak flow of 3.0 MGD which indicated the line has capacity for this flow.

V. Engineering Criteria

Design flows and loadings are outlined previously in this report.

The 2017 Mountain Engineering report included information provided by NYSDEC regarding potential changes to effluent limit requirements that may be required the next time a full technical review occurs. Currently relevant portions of that information are included below for awareness of the potential improvements that could be required. This report does not make definitive recommendations for those potential changes.

Reduced Ammonia Limits

The 2017 Mountain Engineering report indicated the following:

The effluent limits for Ammonia in the current SPDES permit are a daily maximum of 2.0 mg/L as NH₃ from June 1 to October 31 “Summer Months” and a daily maximum of 15.0 mg/L as NH₃ from November 1 to May 31 “Winter Months.” The NYSDEC anticipates that Ammonia limits during the winter months are expected to decrease significantly for the renewal of the 2020 SPDES permit. Preliminary discussions with the NYSDEC anticipate that new limits in 2020 could possibly be 1.2 mg/L as N and 1.5 mg/L as NH₃ during the summer months and 1.8 mg/L as N and 2.2 mg/L as NH₃ during the winter months.

The current limits shown in Appendix D for the winter months have been less than 1 mg/L since 2012. Based on anticipated limits for 2020, it is likely they should meet the limits as long as the current flows remain the same.

To increase nitrification, additional air could be added to the activated sludge system. Additional horsepower upgrades to the blower motors are estimated to cost \$5,000. A more expensive method of achieving nitrification if required, is the integrated fixed film activated sludge (IFAS) process, see the manufacturer's brochure in Appendix J. IFAS has been successful in achieving year-around nitrification in cold weather climates. Fixed media would be installed in the activated sludge aeration tank. The IFAS process is available if the loadings and limits are such that just additional air is not sufficient.

Relative to the above Mountain Engineering report reference to the process blowers, as indicated above the blowers were replaced in 2022, with higher capacity blowers.

Phosphorus Removal

The 2017 Mountain Engineering report indicated the following:

There are currently no phosphorus limits in the Village of Oakfield SPDES permit. However, it is likely that this will change with the technical review of the SPDES permit renewal. It has been determined that the existing plant is capable of removing phosphorus.

Phosphorus levels could be reduced further by increasing the volume of air to the activated sludge process. This would require increasing the horsepower of the blower motors. Additional phosphorus removal could also include chemical treatment. Consideration was given for the method of treatment and it was determined that alum addition may be the best method of treatment in an activated sludge process. Costs for the chemicals, feed system and storage facilities have been included in this report. Additional consideration included the additional sludge type and volume that would be generated in the phosphorus removal process. An evaluation of the type and additional capacity of the sludge handling facilities was also considered. It was determined that clarifiers and digesters were capable of treating phosphorus removal.

Relative to the above Mountain Engineering report reference to the process blowers, as indicated above the blowers were replaced in 2022, with higher capacity blowers.

PH Limits

The 2017 Mountain Engineering report indicated the following:

The NYSDEC has indicated that the receiving waterbody will have the pH limits adjusted in the 2020 SPDES permit to reflect its current Water Quality Classification. Originally, Oak Orchard Creek was listed as a Class “D” stream, but is currently designated a Class “C” stream. Consequently, the limits will be increased to reflect its stricter clarification. The pH limits will change from 6.0 – 9.0 SU to 6.5 – 8.5 SU. Based on activity for years 2010-2014, monthly minimum and maximum effluent pH values were 7.2 and 7.9, respectively. A summary of the Wastewater Facility Operations Reports, shown in Appendix D, has been modified to include the monthly minimum and maximum effluent pH values. It is likely pH levels will remain consistent with the historical levels at the current flows and would likely operate within the new range of 6.5 – 8.5 SU for a Class “C” stream.

Flow Equalization

The 2017 Mountain Engineering report indicated the following:

Correspondence with NYSDEC has indicated that the wet weather micro screen treatment system currently permitted, may or may not be allowed after the next technical review. As such, the following options are discussed.

- *Existing Micro Screen System*

A Micro Screen System was approved by the NYSDEC and installed in 1989. NYSDEC has indicated that the existing wet weather treatment system may or may not continue to be permitted to be utilized during these events. This wet weather treatment system provides primary clarification to excess flows before entering the discharge stream. These excess flows are comprised mainly of storm water resulting from various points of I/I throughout the wastewater collection system. It is likely that typical flows do not include additional organic waste during these events.

The 2017 Mountain Engineering report also discussed the options of a Flow Equalization Tank (preliminarily estimated at 0.24 MGD in size) and Inflow and Infiltration Reduction in the collection system. The conclusion of the report was that the equalization tank option was financially not feasible for Oakfield, and that it would be difficult to predict if the impact of I/I improvements would be significant. Consequently, since Oakfield had received prior approval from the NYSDEC for the Micro Screen System, it was suggested that the system remain in place and be utilized during wet weather events.

VI. Proposed Design

Potential improvements were evaluated based on existing conditions of the Oakfield WWTF and wastewater collection system, increased flows/loadings and phosphorus removal requirements.

A. Existing Conditions

Wet weather inflow into Oakfield's wastewater collection system is significant, with rapid substantial flow spikes during rain events and rapid return to normal flow rates afterward observed at the Oakfield WWTF. This issue should be pursued, particularly if there are flow increases (from STAMP or other users) beyond the STAMP Initial Build flows. Addressing this issue would include Inflow and Infiltration improvements in the Oakfield collection system as identified in the 2022 Mountain Engineering report, or possibly a flow equalization tank at the Oakfield WWTF.

The existing WWTF deficiencies and potential improvements to the remaining aging components identified in the 2022 Mountain Engineering report and above should also be addressed, regardless of any additional flows from STAMP or other sources, as funding allows.

B. Increased Flows and Loadings

As influent flows increase, the following improvements are anticipated:

1. Flow Scenario 1: Existing Flows (WWTF Design Average Flow = 0.130 MGD)

- No improvements required.

2. Flow Scenario 2: Existing Flows + STAMP Initial Build Flows (WWTF Design Average Flow = 0.150 MGD)

- Cleanout of existing reed beds to provide additional sludge handling capacity.
- Provide phosphorus removal facilities as described below.

C. Phosphorus Removal and Offset

The Oakfield WWTF's SPDES permit does not include a phosphorus limit, nor is the WWTF designed for phosphorus removal. However, due to the potential for a future limit, and to benefit the Oak Orchard Creek receiving stream, it is proposed to provide facilities for phosphorus removal to offset the added phosphorus load from the added influent. The Oakfield WWTF does not test for phosphorus, but the average effluent phosphorus concentration was estimated by NYSDEC as 2.2 mg/L (See Appendix G for an excerpt of a document provided by NYSDEC containing estimated effluent

phosphorus levels). Based on this concentration, it is estimated that the existing phosphorus loading to the receiving stream at the current WWTF average flow of 0.130 MGD is approximately 2.4 lbs/day or 870 lbs/yr. Based on a preliminary evaluation, it is anticipated that phosphorus removal from the current estimated 2.2 mg/L down to approximately 0.5 mg/L could be achieved with chemical addition using a metal salt such as aluminum sulfate (alum) or PAC, applied 1) before the aeration basins and 2) before the effluent sand filters. This would result in an estimated phosphorus loading to the receiving stream of 200 lbs/yr under current conditions, for a net reduction of 670 lbs/year which would then be available as a phosphorus offset for the added flows to the Oakfield WWTF (including STAMP Initial Build flows), and potentially any phosphorus-containing process water discharges from STAMP businesses via the OOC Force Main (up to 0.44 MGD additional discharge from the Oakfield WWTF, which is more than the remaining WWTF capacity, or up to 1.1 MGD of STAMP process water discharges through the OOC Force Main, or a combination thereof). The following table summarizes this information.

Table 5 Phosphorus Loadings & Offset			
Parameter	Flow Scenario 1 Existing Flows (0.130 MGD)	Flow Scenario 1 Existing Flows (0.130 MGD) With Phosphorus Removal	Flow Scenario 2 Existing Flows + STAMP Initial Build (0.150 MGD) With Phosphorus Removal
Average Flow (MGD)	0.130	0.130	0.150
Effluent TP (mg/L)	2.2	0.50	0.50
(lbs/day)	2.4	0.54	0.63
(lbs/yr)	870	200	230
Remaining Phosphorus Offset Available (lbs/yr)	-	670	640
Equivalent Additional Oakfield WWTF Discharge at 0.5 mg/L TP (MGD) ¹	-	0.44	0.42
Equivalent STAMP OOC Force Main Process Water Discharge at 0.2 mg/L TP (MGD) ¹	-	1.1	1.05

¹Note: Equivalent Additional Oakfield WWTF Discharge and Equivalent STAMP OOC Force Main Process Water Discharge flows are not additive.

Additional facilities needed to provide this phosphorus removal at the Oakfield WWTF are anticipated to include two chemical feed pump skids, feed piping, and chemical storage (either via a permanent tank or possibly portable chemical totes), and a chemical feed building if there is insufficient space for the chemical feed pump skids and chemical storage tanks/totes within existing buildings. In addition to capital costs for this option, there will be ongoing O&M costs, primarily related to chemical costs and added sludge disposal costs due to the increased volume of sludge that would be generated.

STAMP Sanitary Sewer Force Main

The pump stations and force main will be designed in two phases. Phase 1 will consist of a pump station on the STAMP Site and a force main along Crosby Road that will discharge to the existing Hold and Haul Tank that was installed in 2022. This force main and pump station will be sized to accommodate sanitary sewer flows from Edwards Vacuum.

Phase 2 of the force main project will consist of three pump stations and a force main that will discharge to the Village of Oakfield WWTF. This force main will be sized to accommodate initial flows up to 20,000 gpd.

Phase 1 Force Main: Edwards Pump Station, Force Main and Hold and Haul Tank

VII. Phase 1 Project Information

Phase 1 consists of the Main Pump Station onsite and a 4-inch diameter force main to the Hold and Haul tank located along Crosby Road. The Hold and Haul tank was constructed in 2022 to accommodate Plug Power's sanitary flows until the Onsite WWTF was constructed. Plug Power is currently on a construction pause and will not require sanitary sewer services until after the Village of Oakfield Force Main is placed into service. Phase 1 will be used as a temporary solution to serve Edwards Vacuum until the Village of Oakfield Force Main is completed. Edwards Vacuum is scheduled to receive a Certificate of Occupancy in June 2025. Sanitary sewer service is a requirement for the facility to obtain that certificate.

A. Site Location

The existing STAMP Site consists of agricultural land located within the Town of Alabama (Town), in Genesee County. The location of the proposed STAMP Site including the location of the onsite MPS is shown in Figure 1.

A location map of the onsite gravity collection system, Edwards Pump Station, the hold and haul tank and the force main to the hold and haul tank is shown in Figure 7.

B. Design Flows

The Phase 1 proposed force main and pump station have been sized to accommodate Edwards Vacuum flows only. Edwards Vacuum is expected to begin hiring employees in the first quarter of 2025 and ramp up employment to 154 total employees by the 4th quarter of 2026. Anticipated flows from Edwards Vacuum can be found in Appendix H.

C. Discharge Location

Due to project readiness and sanitary sewer needs, initial flows from Edwards Vacuum will be conveyed to the hold and haul tank located along Crosby Road, approximately 1,500 LF south of the intersection of Crosby Road and Stamp Drive. The STAMP Sewer Works will contract with a septic hauler and the Village of Oakfield WWTF to pump and haul the sanitary sewer from the Hold and Haul Tank to the Village of Oakfield WWTF.

The GCEDC is in the process of renewing a disposal agreement with the Village of Oakfield to accept hauled sewage from the STAMP site to the Village of Oakfield WWTF.

D. Force Main Design

The force main design considered raw wastewater velocity, total dynamic head (TDH), and maximum rated working pressures for multiple diameters of PVC sanitary force main pipe. Pressures in the force main are not expected to exceed 100 PSI. To prevent settling of solids, a minimum velocity 2 ft/s was used to determine the minimum flow rate in each force main size. For this initial phase of the force main, the pump station will be operated to provide a flushing velocity through the force main for an extended period of time to properly flush the force main.

Force main design calculations for the 1-1/4"-inch force main to the Hold and Haul Tank, as well as the system curves for the force main can be found in Appendix I at the end of this report.

E. Force Main Profile

Overall, the force main route from the Edwards Pump Station the Hold and Haul Tank is generally uphill. The pump off elevation of the MPS is approximately 657.06' and the force main discharge elevation at the Hold and Haul Tank is approximately 672.15'.

The force main pipe is purposely installed sloping up and down along the route to provide designated high points for releasing air within the pipe.

F. Edwards Pump Station (EPS)

For Phase 1 construction of the Main Pump Station, the pump station has been designed to accommodate expected sanitary sewer flows from Edwards Vacuum development through the 4th quarter of 2026. At which time the SWW anticipates the force main to the Village of Oakfield to be constructed and operational. Based on the Edwards Vacuum hiring schedule, the maximum flow the pump station will see is 3,080 gpd.

The proposed EPS will be constructed south of Stamp Drive, on the east side of Crosby Road, directly across from the designated utility parcel. Placing the pump station and future MPS here will provide proper grades to serve the entire northern portion of the STAMP site by gravity. Once the main pump station and Oakfield force main are placed into service the EPS will be de-commissioned.

The EPS will utilize submersible pumps and a 3' diameter premanufactured pump station sized in accordance with Ten States Standards. Wet well sizing calculations can be found in Appendix I.

The controls for the submersible pumps will be installed on a panel board adjacent to the pump station. All enclosures will be weatherproof.

G. Hold and Haul Tank Design

In 2022, after review and approval by NYSDEC, a Hold and Haul Tank ("Tank") was installed to accommodate sanitary sewer flows from Plug Power until the STAMP Onsite WWTF was constructed. Plug Power is currently on a construction pause and will likely not resume construction or require sanitary sewer service until after the Village of Oakfield Force Main is installed. Therefore, the Tank will be repurposed to accommodate Edwards Vacuum sanitary sewer until the Oakfield force main is operational.

The Hold and Haul Tank has a maximum capacity of 16,000 gallons and a target pumping capacity of 7,000 gallons. Adjustable floats have been installed in the Tank to trigger an alarm when the Tank has reached a predetermined level. The typical pumping frequency of the tank is set at 7,000 gallons. The first float will be set at 10,500 gallons and will signal a red flashing light when triggered. The second float will be set at 14,000 gallons and will signal a second red flashing light when triggered. A third and final highwater alarm has been set at 15,607 gallons in the Tank for emergency situations. The alarms have been located in an open area that will be easily visible and audible.

The Tank will require a pumping frequency in accordance with the table below that is based on the number of employees that Edwards Vacuum will have on-site as the factory ramps up. Should there be days during the week (weekends or holidays) that Edwards is not operating at full capacity, the pumping schedule may be adjusted accordingly. The STAMP Sewer Works Corporation will contract with a local septic hauling service to ensure the pumping frequency is achieved. It is anticipated that the Oakfield Force Main will be operational no later than quarter 3 of 2026.

Pumping Schedule

	Number of Employees	Design Flow Rate (gpd)	Pumping Frequency (days)
2025			
Q1	8	120	58
Q2	19	285	25
Q3	34	510	14
Q4	92	1,380	5
2026			
Q1	122	2,440	3
Q2	134	2,680	3
Q3	139	2,780	3
Q4	154	3,080	2

Note, pumping of the Tank will not be required for Q3 or Q4 of 2026 unless there are delays in the construction of the Oakfield Force Main and/or the planned Oakfield

WWTF improvements. Design calculations for the Tank and expected sanitary flows from Edwards Vacuum can be found in Appendix H.

Phase 2 Force Main: Village of Oakfield Force Main, Main Pump Station, Ham Road Intermediate Pump Station & N. Pearl Street Intermediate Pump Station

VIII. Project Information

The 2014 edition of the Recommended Standards for Wastewater Facilities, or Ten States Standards (10SS) and the 2016 Revision of the Guides for the Design of Wastewater Treatment Works, or TR-16, were used as references and guidance for the design of the proposed pump stations and force main.

A. Site Location

The existing STAMP Site consists of agricultural land located within the Town of Alabama (Town), in Genesee County. The location of the proposed STAMP Site including the location of the onsite MPS are shown in Figure 1.

The proposed force main route to the Village of Oakfield, the Main PS, the location of the Ham Road IPS, and the North Pearl Road IPS are shown in Figure 8.

B. Design Flows

The proposed force main, main pump station and intermediate pump stations have been sized to accommodate sanitary wastewater produced at the STAMP Site generated at full buildout and STAMP's commitment to providing the Town of Alabama capacity within the proposed force main. The Town includes the Hamlet of Alabama, Hamlet of Basom, Hamlet of South Alabama and Hamlet of Wheatville. Initial sanitary sewer flow rates to the Village of Oakfield are anticipated to be approximately 20,000 gpd from the STAMP site only. Treatment capacity upgrades at the Village of Oakfield WWTF, should they be necessary, will be addressed in a basis of design report evaluating the Village WWTF anticipated flow rates and STAMP Design Average Flow rate calculations can be found in Appendix D.

Flows to the main pump station, Ham Road Intermediate Pump Station, North Pearl Street Intermediate Pump Station, and force main will consist solely of raw sanitary sewer flows generated by the STAMP Site and the Town. Currently, there are no operations that anticipate generating process water at the STAMP Site. Should operations require process water requiring disposal, the respective businesses generating those process waters will be required to obtain their own SPDES permit from NYSDEC and treat the process water to the requirements of that permit prior to disposal. Disposal will be accomplished via a separate pump station and the force main discharging to Oak Orchard Creek in the Town of Shelby, for a maximum process flow rate of 5 MGD.

As stated above, the current anticipated flows through the force main to the Village of Oakfield will be approximately 20,000 gpd. However, the force main and pump stations will be sized to accommodate full build out of the STAMP site and the Town

of Alabama. Flows in excess of 20,000 gpd will require additional coordination with the Village of Oakfield prior to discharging to the collection system.

Force Main Design Flow Rate

Phase	Design Average Flow (gpd)
Edwards Phase 1 Flows	7,600
STAMP Initial Buildout	20,000

C. Discharge Location

Based on estimated construction costs, minimal environmental impacts, existing water quality, and available treatment capacity, the Village of Oakfield WWTF was determined to be the preferred facility to treat the sanitary wastewater generated by the STAMP Site. A map showing the selected route and discharge location is shown in Figure 8.

D. Force Main Route Analysis

It was determined that the force main route to the Village of Oakfield would begin at the STAMP Site near the intersection of Crosby Road and STAMP Drive. The force main will continue along the south side of STAMP Drive and turn north, along the west side of Allegany Road (NYS Route 63/77), then cross Allegany Road and pass through the Town of Alabama Highway Department property to Ham Road. The force main will continue along the south side of Ham Road to Macomber Road where it will turn north and continue to Lewiston Road along the west side of Macomber Road. From there the force main will continue along Lewiston Road to the intersection of Maltby Road, Lewiston Road and Albion Road. Three alternate force main routes were considered at this location as follows:

1. Lewiston Road

The Lewiston Road alternative includes installing the force main along Lewiston Road to the existing Village of Oakfield sanitary sewer collection system along Judge/ Lewiston Road. This option was not selected for two reasons. First, there are flow and capacity concerns within the Village of Oakfield. The collection system consists of 12-inch PVC at the point of connection. However, the collection system reduces to 10-inch clay tile at Water Street. Second, Village personnel have concerns with odor. Because of this, connecting adjacent to the Oakfield-Alabama School along Lewiston Road (NYS Route 63) was a concern.

2. Maltby Road to the Village WWTF Outfall Easement

This alternative included installing the force main along the north side of Maltby Road approximately 6,300 linear feet to the Village of Oakfield WWTF outfall easement. The force main would then be installed parallel to the existing outfall pipe to the WWTF. A significant cultural resource has been reported along Maltby Road, within 800 feet of the existing Oakfield WWTF outfall location, thus this option was not selected.

3. Maltby Road to North Pearl St to Mill Street

This alternative consists of installing the force main along Maltby Road to North Pearl Street to Mill Street, through the WWTF property to the WWTF, with the final portion along Lewiston Road and the portion along Maltby Road consisting of gravity sewer in lieu of force main. This alignment will involve extensive road reconstruction and coordination with the Village of Oakfield. However, GCEDC and the Village of Oakfield have determined this is the best route possible for the installation of the force main, provides the most benefit to the Village and has the least environmental impact on the region.

A general layout for each route option considered for the proposed force main can be found in Figure 8.

E. Force Main Sizing Analysis

The force main design considered raw wastewater velocity, total dynamic head (TDH), and maximum rated working pressures for multiple diameters of PVC sanitary force main pipe. Pressures in the force main are not expected to exceed 100 PSI. Retention time of the raw wastewater within the force main has also been considered. Concerns were raised over the wastewater's potential for septic conditions and the objectionable odors and hydrogen sulfide gas that could be produced with a large 12-inch force main from the STAMP Site to the Village WWTF. The following force main sizes have been considered:

1. 12-Inch Diameter Force Main

Initially, a 12-inch diameter force main was considered to accommodate full build out conditions. As the design progressed, it was determined that the retention time of the sanitary sewer within the force main would take in excess of 30 days to reach the Oakfield WWTF at the initial low flow conditions. This raised concerns with septic conditions resulting in odor issues and hydrogen sulfide gas production. Additional pipe sizes were then considered and evaluated.

2. 4-Inch Diameter Force Main

A 4-inch diameter force main was considered to address odor and septicity concerns. Under initial flow conditions, it was determined that the wastewater would reach the WWTF after 3.24 days, which addressed the concerns noted above. However, a 4-inch force main cannot accommodate full buildout flow rates. The maximum flow rate the 4-inch force main can pass is 172,800 gallons per day, with pumps operating 24-hours per day. It was determined that a single, 4-inch force main is insufficient for full build out and thus was not selected.

3. 6-Inch Diameter Force Main

A 6-inch diameter force main was considered to address full build as well as take into consideration odor and septicity concerns. It was determined that the initial sanitary flows would reach the Oakfield WWTF after approximately 7 days within a 6-inch force main. The 6-inch force main could also accommodate full buildout conditions, utilizing an equalization tank at both the STAMP Site and the Village of Oakfield WWTF. It was determined that the 7-day retention time within the 6-inch force main exceeded the allowable limit for the wastewater age.

4. Dual 4-inch and 6-inch Force Mains

To address concerns with odor and septicity within the force main, at varying stages of buildout at the STAMP Site, a combination of a 4-inch and a 6-inch pipe have been selected. The 4-inch force main will accommodate initial flows from the STAMP Site (including Edwards Vacuum, Plug Power and other future development) up to 43,200 gpd. Once the usage at the STAMP Site exceeds the capacity of the 4-inch force main, the 6-inch force main will be placed into service. With the use of flow equalization (EQ) tanks at the STAMP Site and the Village of Oakfield WWTF, the 6-inch force main will accommodate full buildout sanitary sewer flows from the STAMP Site.

Force main design calculations for the 4-inch and 6-inch force main options can be found in Appendix J. Force main design calculations and system curves for the dual 4-inch and 6-inch force mains can be found in Appendix K at the end of this report.

To prevent settling of solids, the minimum flow required to maintain 2 ft/s in the 4-inch DR-18 PVC (4"-4.23" ID) force main is 87 gpm and the minimum required flow rate in the 6-inch DR-18 PVC main (6"-6.09" ID) is 180 gallons per minute (GPM).

F. Force Main Profile

Overall, the force main route from the MPS the Village of Oakfield WWTF is generally uphill with multiple high points and low points along the route. The pump off elevation of the MPS is approximately 647.12' and the force main discharge elevation at the Village of Oakfield WWTF is approximately 718.00'. The force main a high point is along Lewiston Road, approximately 800 LF north of the intersection of Maltby Road, at approximately 752'. To avoid issues with air in the force main in this high area from vacuum relief conditions due to the WWTF being lower than the high point, gravity sewer will be installed from this point on Lewiston Road to a final pump station at North Pearl Street.

Combination air valves will be installed within maintenance manholes at high points and intermediate points along the profile.

G. STAMP Main Pump Station (MPS)

The Main Pump Station has been designed to accommodate the initial sanitary sewer flow rate from the STAMP Site (9,000 gpd, Edwards Vacuum and Plug Power) and the full build out flow rate (187,000 gpd) and the allocated capacity to accommodate the Town of Alabama's future sanitary sewer usage which would discharge to this pump station (58,000 gpd), for a total design average daily flow rate of 245,000 gpd.

The proposed MPS will be constructed south of Stamp Drive, on the east side of Crosby Road, directly across from the designated utility parcel. Placing the MPS here will provide proper grades to serve the entire northern portion of the STAMP site by gravity.

The permanent MPS will utilize submersible pumps and a 10' diameter concrete structure sized in accordance with Ten States Standards. The pump station has been designed with a valve vault outside of the wet well to isolate pumps and to provide a bypass connection for future maintenance. Valving has been designed to allow the operator to easily transfer flows from the 4-inch to the 6-inch force main when necessary.

The wet well will be covered and have an inverted "J" vent pipe to provide air displacement to the atmosphere. Portable ventilation equipment shall be used when access to the wet well is required. In addition, a vault will be constructed to house a magnetic flow meter to measure flow pumped from the pump station. Wet well sizing calculations can be found in Appendix K.

The controls for the submersible pumps will be housed in a precast concrete building. This enclosure will also house the utilities to the pump station including potable water and electric services.

For operation during a power failure, a standby diesel-fueled generator with a sound-attenuating enclosure will be provided in accordance with the requirements of TR-16.

Odor control provisions will be provided for all flow conditions due to the potential for septic conditions with extended retention times in the force main. These provisions will include an air-powered wet well mixer to keep solids in suspension and provide a level of aeration. Chemical treatment (bioxide) will be used along with mixing to reduce the production of hydrogen sulfide gas and control odors. A representative sample of the wastewater must be taken before bioxide dosing can be determined. Once the pump station is operational a sample will be taken and bioxide dosing will be determined.

H. Ham Road Intermediate Pump Station (IPS)

The Ham Road Intermediate Pump Station (IPS) has been designed to accommodate initial flows and full build out flows, accepting flow from STAMP Main Pump Station plus, the Hamlet of South Alabama and the Hamlet of Wheatville.

The proposed Ham Road IPS will be constructed near the intersection of Ham Road and Knowlesville Road. This will give the Hamlet of South Alabama and Hamlet of Wheatville the ability to discharge to a wet well before pumping to the Village of Oakfield WWTF. The Ham Road IPS will allow for smaller pumps at the STAMP site, the Hamlet of South Alabama, and the Hamlet of Wheatville.

The permanent Ham Road IPS will utilize submersible pumps and a 10' diameter concrete structure sized in accordance with Ten States Standards. The pump station has been designed with a valve vault outside of the wet well to isolate pumps and to provide a bypass connection for future maintenance. Valving has been designed to allow the operator to easily transfer flows from the 4-inch to the 6-inch force main when necessary.

The wet well will be covered and have an inverted "J" vent pipe to provide air displacement to the atmosphere. Portable ventilation equipment shall be used when access to the wet well is required. In addition, a vault will be constructed to house a magnetic flow meter to measure flow pumped from the pump station. Wet well sizing calculations can be found in Appendix K.

The controls for the submersible pumps will be housed in a metal sided enclosure. This enclosure will also house the utilities to the pump station including potable water and electric services.

For operation during a power failure, a standby diesel-fueled generator with a sound-attenuating enclosure will be provided in accordance with the requirements of TR-16.

Odor control provisions will be provided for all flow conditions due to the potential for septic conditions with extended retention times in the force main. These provisions

will include an air-powered wet well mixer to keep solids in suspension and provide a level of aeration. Chemical treatment (bioxide) will be used along with mixing to reduce the production of hydrogen sulfide gas and control odors. A representative sample of the wastewater must be taken before boxide dosing can be determined. Once the pump station is operational a sample will be taken and bioxide dosing will be determined.

I. North Pearl Street Intermediate Pump Station (IPS)

The North Pearl Street Intermediate Pump Station (IPS) has been designed to accommodate initial flows and full build out flows, accepting flow from STAMP Main Pump Station, Ham Road Pump Station, the Town of Alabama plus, future development in the Town of Oakfield along North Pearl Street and Maltby Road.

The proposed North Pearl Street IPS will be constructed at the intersection of Maltby Road and North Pearl Street. This will give the Town of Oakfield the ability to extend sanitary sewer services to residences along Maltby Road and North Pearl Street and connect to the wet well before pumping to the Village of Oakfield WWTF.

The North Pearl Street IPS will utilize submersible pumps and a 10' diameter concrete structure sized in accordance with Ten States Standards. The pump station has been designed with a valve vault outside of the wet well to isolate pumps and to provide a bypass connection for future maintenance. Valving has been designed to allow the operator to easily transfer flows from the 4-inch to the 6-inch force main when necessary.

The wet well will be covered and have an inverted "J" vent pipe to provide air displacement to the atmosphere. Portable ventilation equipment shall be used when access to the wet well is required. In addition, a vault will be constructed to house a magnetic flow meter to measure flow pumped from the pump station. Wet well sizing calculations can be found in Appendix K.

The controls for the submersible pumps will be housed in a metal sided enclosure. This enclosure will also house the utilities to the pump station including potable water and electric services.

For operation during a power failure, a standby diesel-fueled generator with a sound-attenuating enclosure will be provided in accordance with the requirements of TR-16.

Odor control provisions will be provided for all flow conditions due to the potential for septic conditions with extended retention times in the force main. These provisions will include an air-powered wet well mixer to keep solids in suspension and provide a level of aeration. Chemical treatment (bioxide) will be used along with mixing to reduce the production of hydrogen sulfide gas and control odors. A representative sample of the wastewater must be taken before boxide dosing can be determined.

Once the pump station is operational a sample will be taken and bioxide dosing will be determined.

J. Force Main Equalization Tank at Oakfield WWTF

An above-grade glass-lined steel tank will be provided at the Oakfield WWTF to receive flow from the force main and allow controlled release to the WWTF influent structure.

A valve vault will be provided on the force main prior to its entry into the tank, and will include a motorized pinch valve controlled by a pressure sensor to open when the Maltby Road IPS is pumping and to close when pumping stops, in order to prevent siphoning and introduction of an air pocket into a portion of the force main which will be higher than the equalization tank water level. A flowmeter will also be provided at this vault to be used for billing and demarcation of ownership of the STAMP force main.

A separate vault with a control valve will be provided for the WWTF operator to regulate how the tank discharges to the WWTF influent, whether just to “flatten” the flows between pumping cycles or to store total STAMP force main flows during periods of high I/I from the Village.

The equalization tank will be sized to provide, in conjunction with a future equalization tank at the STAMP MPS, the ability to store an entire maximum day sewage volume from STAMP and the Town of Alabama at full build-out. The equalization tank will be provided with aeration and mixing via an aeration system and blower(s).

K. Maintenance Manholes

Maintenance manholes will be installed at each high point and intermediate locations along the route of the force main between the STAMP Site and the discharge location. Each manhole is a 5'-0" diameter precast concrete structure that contains an internal access ladder, a removable section of pipe, combination air valve, and vent piping. Combination air valves (combining air release and air/vacuum valve functions) are required to prevent air from becoming captured inside the force main pipe, which causes flow constrictions and results in poor pumping efficiencies, as well as to exhaust air during pipeline filling and admit air during draining or vacuum conditions. The removable fitting provides a means to access the force main for flushing, testing and bypass pumping purposes. The fitting consists of a 24" long straight section of ductile iron pipe that can easily be removed for the attachment of other fittings, testing equipment or bypass pumps. Each manhole will also have a 24" diameter cast iron manhole cover placed on top for access to the internal components. The cover will be installed so it is level with the finish grade and will be placed over top of the pipe for access.

L. Flow Metering

Magnetic flow meters, located on the discharge piping within the new Main Pump Station, Ham Road Intermediate Pump Station, and North Pearl Street Intermediate Pump Station valve vaults, will monitor and record the instantaneous and total flows at each pump station.

M. Main Line Valves

The force main will require numerous main line valves along the route from the STAMP Site to the discharge location. Two (2) valves will be located at each of the maintenance manholes to provide a means to isolate sections of the force main for testing and maintenance purposes. Each valve requires a cast iron valve box, installed to finish grade, for access to the valve's operating nut. The top of the valve box is approximately 8" in diameter and installed level with the finish grade.

N. Force Main Markers

Fiberglass pipeline markers will be placed at periodic intervals along the entire force main route. Each marker is approximately 4" wide and extends 5' above grade. The markers are used to help identify the location of the underground pipe, especially during the winter months and within heavily vegetated areas.

O. Environmental Resources

A wetland delineation was completed for the proposed force main route from the STAMP Site to the discharge location along North Pearl Street in the Village of Oakfield. The wetland delineation identified seven (7) total stream crossings and one (1) non-jurisdictional wetland that will be crossed by the force main installation. There are three (3) Class C stream crossings identified in the delineation report. The wetland delineation report completed by CC Environment & Planning can be found in Appendix L.

The first creek crossing is located within the STAMP site boundary, along STAMP Drive at the intersection of the bypass road hammerhead. The force main will cross tributary 3 in this area. The crossing of Tributary 3 will be completed with horizontal directional drilling (HDD) methods. A directional drilling launching pad will be constructed on one side of the creek crossing, outside of the banks of the creek. The pad consists of a temporary gravel pad to support the HDD machine while it is working. The pad will be removed at the completion of the crossing. The HDD machine will install the pipe a minimum of 10 feet below the bottom of the creek bed. All disturbance and all work will take place outside of the banks of the creek. This will eliminate any impacts to the natural stream bed.

The second creek crossing will take place at Brinningstool Creek along Ham Road, just west of Knowlesville Road, a DEC Class C stream. This crossing will take place within

permanent easements outside of the existing road right-of-way and will be completed utilizing HDD installation methods, similar to the method stated above. All disturbance and all work will take place outside of the banks of the creek and the stream bed. The force main will be installed a minimum of 10 feet below the stream bed elevation. Eliminating any impacts to the natural stream bed.

The above noted portion of Brinningstool Creek was crossed with the installation of the 8-inch water main for the Town of Alabama water district project by HDD installation methods at approximately 6 feet below the creek bottom. There were no issues with HDD inadvertent returns with this crossing. The force main will be installed with a similar alignment and depth as the water main. It is anticipated that the 4-inch and 6-inch force mains will be installed in this area without issues.

The third-stream crossing is located along North Pearl Street and is an unnamed tributary to Oak Orchard Creek, also a DEC Class C stream. The force main will be installed utilizing HDD installation techniques. All disturbance and all work will take place outside of the banks of the creek and the stream bed. The force main will be installed a minimum of 10 feet below the stream bed elevation. Eliminating any impacts to the natural stream bed.

A preliminary geotechnical assessment prepared by Foundation Design is included in Appendix M. Additional geotechnical investigation is currently being performed to confirm the soil conditions in these areas are conducive to HDD methods without impacting the environment.

Should HDD prove to not be a viable installation option, the crossings will be made by open cut installation methods. To complete the work associated with open cut crossings, a temporary coffer dam with a temporary culvert pipe will be constructed to provide a continuous flow of water. The temporary culvert pipe will be bulkheaded into the existing culvert pipe to prevent backflow from downstream. Turbidity curtains will be installed upstream and downstream of the crossing to prevent the transportation of sediment outside of the work area. Construction will take place during the summer months when flows are typically reduced, further reducing the potential for sediment transfer. However, dewatering will be required during crossing operations. Water from the work area will be pumped into a filter bag to contain any sediment and allow the water to disperse on the ground naturally. These crossings should only take approximately 2-3 working days per each crossing.

There are (4) additional unnamed streams and drainageways identified in the wetland delineation summary prepared by CC Environment & Planning. The proposed force main alignment will cross these unnamed streams and drainageways by open cut methods. If the stream or drainageway is flowing water at the time of construction, an earthen coffer dam will be used to divert water while the pipe is being installed. The coffer dam will be removed immediately following the completion of the crossing and the area will be immediately seeded with a wetland seed mix and mulched. All erosion and sediment control measures will be installed prior to beginning the crossing.

Disturbance to the unnamed stream or drainageway will be minimized to every extent practicable. Some of these crossings may take place under the existing road drainage culvert. This would result in no impact to the unnamed stream or drainageway. Each of the smaller crossings should take less than a day to complete.

The force main will also be installed adjacent to a non-jurisdictional wetland on the STAMP site, wetland W47, along Allegany Road. The FM will be installed using open-cut techniques in this area. Proper erosion and sediment control measures will be installed along the area of disturbance. Native soils will be used as backfill material and all disturbed areas will be seeded and mulched with an approved wetland seed mix. Restoration of surfaces will take place immediately after the work in this area is completed. This crossing should only take 1 to 2 working days.

The table below shows each crossing time and force main installation method.

ID	Wetland/ Stream Name	Classification	Crossing Method	Disturbance Type
S1	Unnamed	Unclassified	Open Cut	Temporary
S2	Unnamed	Unclassified	Open Cut	Temporary
S3	Brinningstool Creek	NYS DEC Class C Stream	HDD	None
S4	Unnamed	Unclassified	Open Cut	Temporary
S5	Unnamed	Unnamed	Open Cut	Temporary
S6	Unnamed Tributary to Oak Orchard Creek	NYS DEC Class C Stream	HDD	None
T3	Tributary 3	NYS DEC Class C Stream	HDD	None
W47	Unnamed	Non-jurisdictional wetland	Open Cut	Temporary

1. Threatened and Endangered Species

An agency database review via online consultation tools was conducted on March 1, 2024 to determine whether state- or federally-listed threatened or endangered species may be present within the Site.

New York State

Reviews of NYSDEC's Environmental Resource Mapper and Environmental Assessment Form (EAF) Mapper identified three listed species in the vicinity of the site (see Appendix N):

1. Northern harrier (*Circus hudsonius*), a New York State threatened species
2. Short-eared owl (*Asio flammeus*), a New York State endangered species
3. Sedge wren (*Cistothorus platensis*), a New York State threatened species.

All three species require large tracts of grassland habitat, which is present adjacent to the project area. However, the work will be occurring in the immediate roadside, which is not typically used by these species due to the regular disturbance, thus any potential impacts will be minor. These impacts will be temporary, occurring primarily during construction. Any disturbed vegetation will be reseeded immediately following construction, allowing for restoration of potential habitat.

Federal

Review of U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) identified two species as potentially occurring within the Project site (see Appendix L):

1. Northern long-eared bat (NLEB; *Myotis septentrionalis*), a federally listed endangered species
2. Monarch butterfly (*Danaus plexippus*), a candidate species for federal listing

NLEB are primarily a forest-dependent species that utilize a variety of forest habitats for roosting, foraging, and rearing young. The decline of the NLEB is due to white-nose syndrome, a fungal disease, and not habitat loss. The NYSDEC encourages the voluntary implementation of all forest management activities during the hibernation period, November 1 through March 31. USFWS has indicated that there are no known NLEB maternity roost trees within 1.5 miles or winter hibernacula within 5 miles of the Site (i.e., no on-site occupied habitat or designated critical habitat present, <https://www.fws.gov/office/new-york-ecological-services-field/species>). It does not appear on the NYSDEC Environmental Resource Mapper, thus NYSDEC indicates that no known occurrences of the species are within the vicinity of the Site. The NLEB range-wide key within IPaC was consulted to determine the likelihood of potential "take" of the species. Based on the submission, a determination of "No Effect" was reached (Appendix N). No further consultation is necessary.

The second species listed on the USFWS IPaC Official Species List is the monarch butterfly. This is a candidate species for federal listing and currently is not listed, thus impacts to the species do not need to be formally evaluated. That being said, this work will be conducted within the regularly maintained right-of-way, which does not provide habitat for the monarch butterfly due to the regular mowing that occurs in this area.

2. Cultural Resources

A majority of the proposed force main route was reviewed by the NYS State Historic Preservation Office (SHPO) for impacts to cultural resources through the design phases of the Town of Alabama water projects. There were no significant cultural impacts identified, and the route was cleared by SHPO in connection with the previously constructed water project referenced above. A majority of the force main project will be constructed in the existing road rights-of-way where previous ground disturbance has occurred. However, the proposed route will be submitted to the SHPO office for review and necessary investigations will be completed to clear the project of any cultural resources.

A known burial ground has been identified along Maltby Road, east of North Pearl Street. However, the force main alignment is more than 1,500 feet away from the location of the burial ground. As mentioned above, A majority of the force main project will be constructed in the existing road rights-of-way where previous ground disturbance has occurred.

IX. Conclusion

The offsite sanitary sewer project is an integral and critical part of the necessary infrastructure for the STAMP Site. Planned development of the STAMP site is proceeding rapidly pursuant to local, state and national needs and plans. While the sanitary sewer needs were initially to be met by on-site treatment and the under-construction force main to Oak Orchard Creek, that plan has faced significant complications and uncertainty due to a combination of environmental conditions and legal action brought by Orleans County and the Nation. To meet the development needs of the STAMP tenants in a practicable timeline, the management of initial flows of sanitary waste by the Oakfield WWTF is the ideal alternative. A feasible and practicable force main is proposed to facilitate the system and is in development. Additionally, the project is contained fully within Genesee County and in furtherance of the developing cooperative agreements between STAMP and Oakfield. The Oakfield WWTF has existing capacity to accept sanitary waste from the initial development of STAMP and its tenants. The GCEDC and SSW are committed to providing safe and reliable wastewater treatment that will meet the current and future needs of water quality and treatment capacity for the STAMP Site, without negatively impacting the Oakfield WWTF. These specific projects will be imperative in achieving these goals.

Figure 1

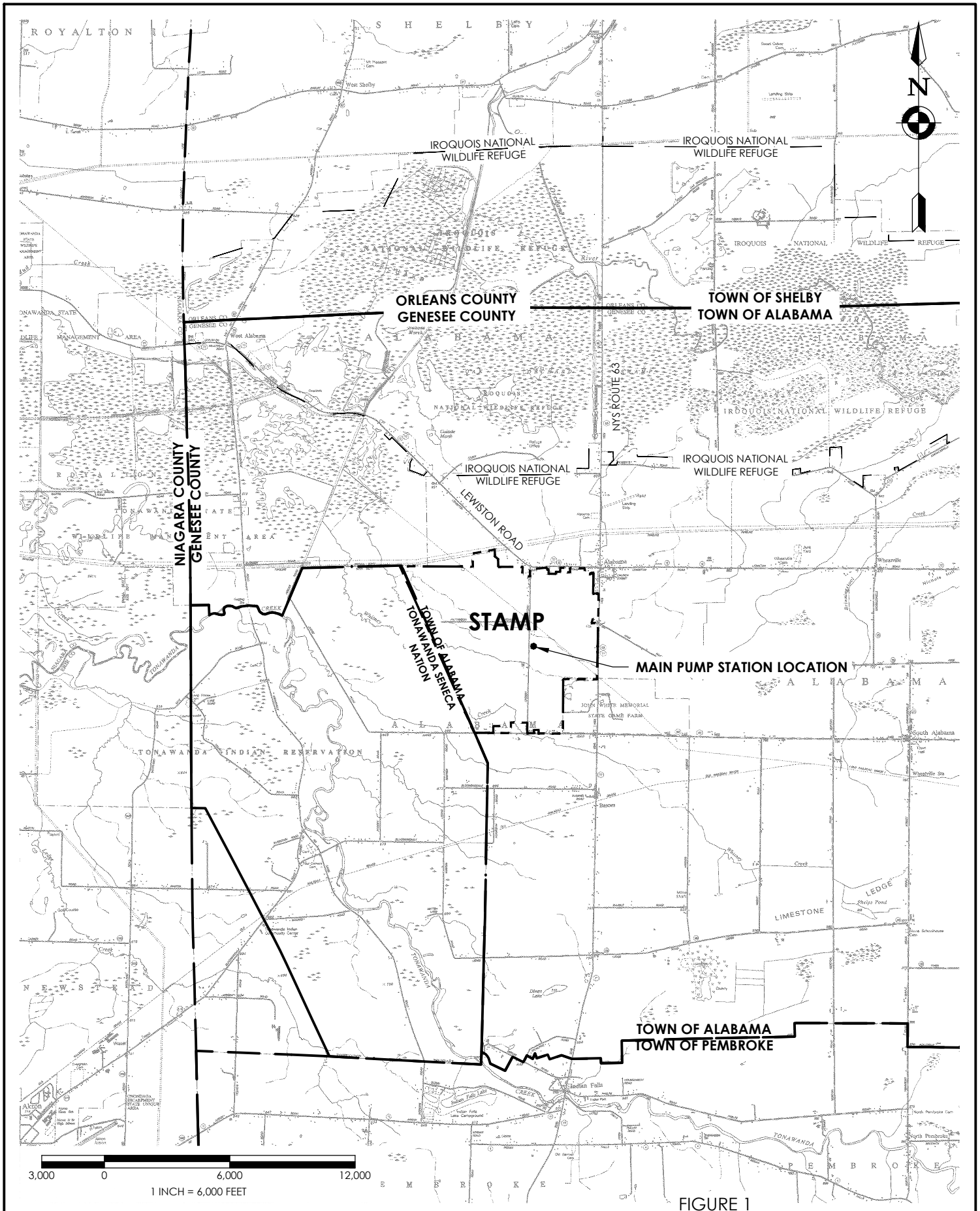
STAMP Site General Location Map

Plotted By: Dan Hards

Date last plotted: 2/21/2024 1:03 PM

Date last accessed: 2/21/2024 1:03 PM

Referenced Drawings: None
Drawing Name: J:\PROJECTS\GCEDC\STAMP Offsite Sewer\Design\ACAD\Civil\Figures\Location Map Feb 2024.dwg



205 ST. PAUL STREET, SUITE 500
ROCHESTER, NEW YORK 14604
TEL (800) 274-9000
FAX (585) 232-5836

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DATE: 3/23/22

DRAWN: ZLA

CHECKED: ARK

SCALE: AS NOTED

PROJ. #: 15981.00

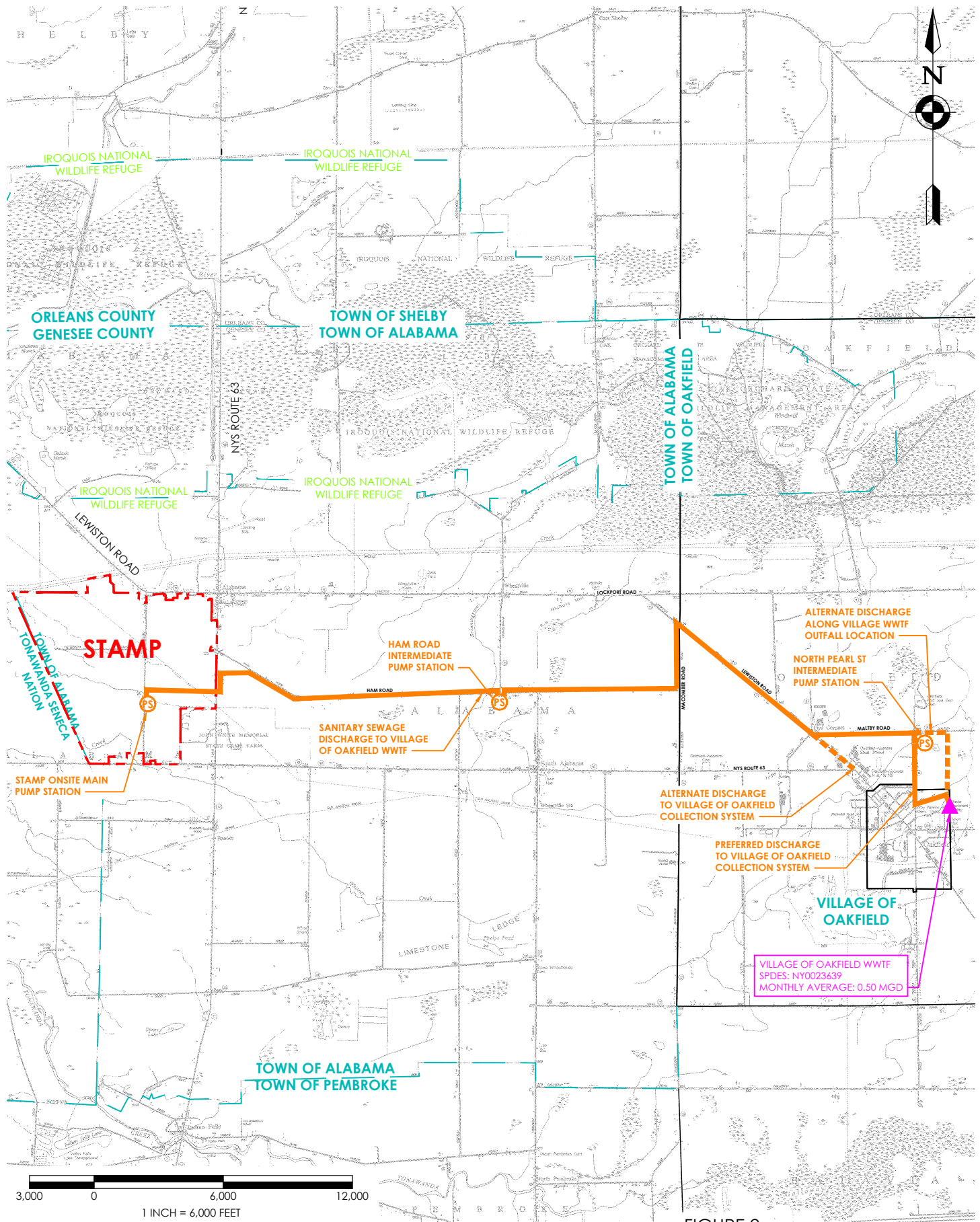
STAMP SITE GENERAL LOCATION MAP

WNY STAMP OFFSITE SEWER

TOWN OF ALABAMA AND TOWN OF SHELBY, NEW YORK STATE

Figure 2

STAMP Force Main General Location Map



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DRAWN: ZLA

CHECKED: ARK

SCALE: AS NOTED

PROJ. #: 15981.00

FORCE MAIN GENERAL LOCATION MAP

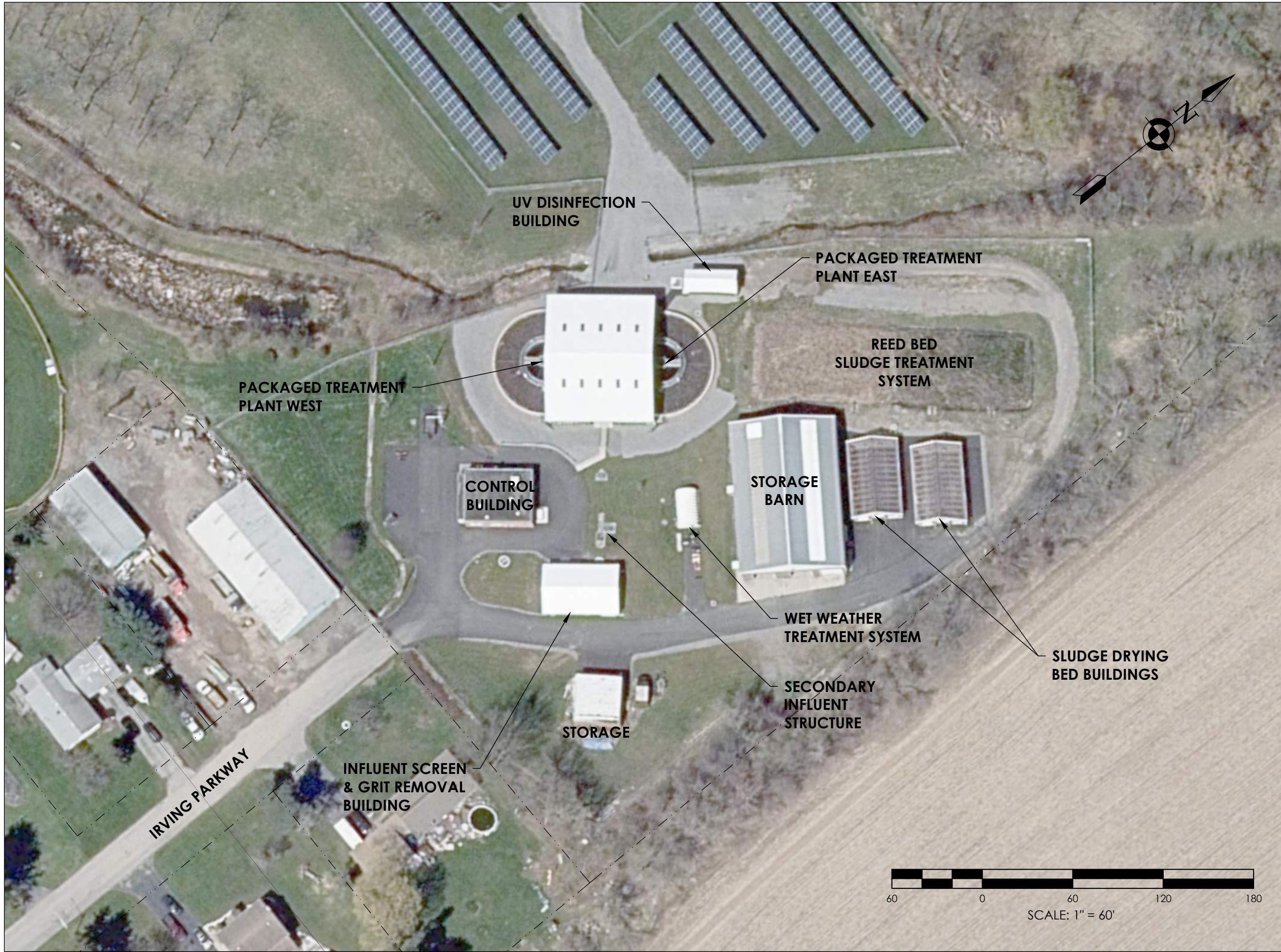
WNY STAMP OFFSITE SEWER

TOWN OF ALABAMA AND TOWN OF SHELBY, NEW YORK STATE

Figure 3

Village of Oakfield WWTF Site Layout

Sheet size: 11x17
Drawing Name: J:\PROJECTS\GCEDC\General\Oakfield WWTF Village of Oakfield WWTF Site Layout.dwg
Date last accessed: 3/5/2024 10:23 AM
Date last plotted: 3/5/2024 10:25 AM
Plotted By: Nathan Oliva



CPL | Architecture Engineering Planning

255 Woodcliff Drive, Suite 200
Fairport, NY 14450

CPLteam.com

NY ENGINEERING FIRM CERTIFICATE #018330

PROJECT INFORMATION

Client Name

**GENESEE COUNTY
ECONOMIC DEVELOPMENT
CENTER**

Project Name

**OAKFIELD WWTF
BASIS OF DESIGN
REPORT**

Project Address

19 IRVING PARKWAY
OAKFIELD, NY 14125

SHEET INFORMATION

Issued	Scale
3/1/24	1" = 60'
Drawn By	Checked By
NMO	DAC

Drawing Title

WWTF SITE LAYOUT

Drawing Number

FIGURE 3

Figure 4

Village of Oakfield WWTF General Site Plan

IS A VOUCHER OF THE NEW YORK STATE EDUCATION LAW ARTICLE 143 SECTION 202A FOR ANY PERSON, UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEGINS THE SEAL OF AN ENGINEER OR LAND SURVEYOR SHALL APPEAR TO THE ITEM BE SEEN AND THE SEAL OF SUCH MATERIAL AND A REPRODUCTION OF THE MATERIAL.

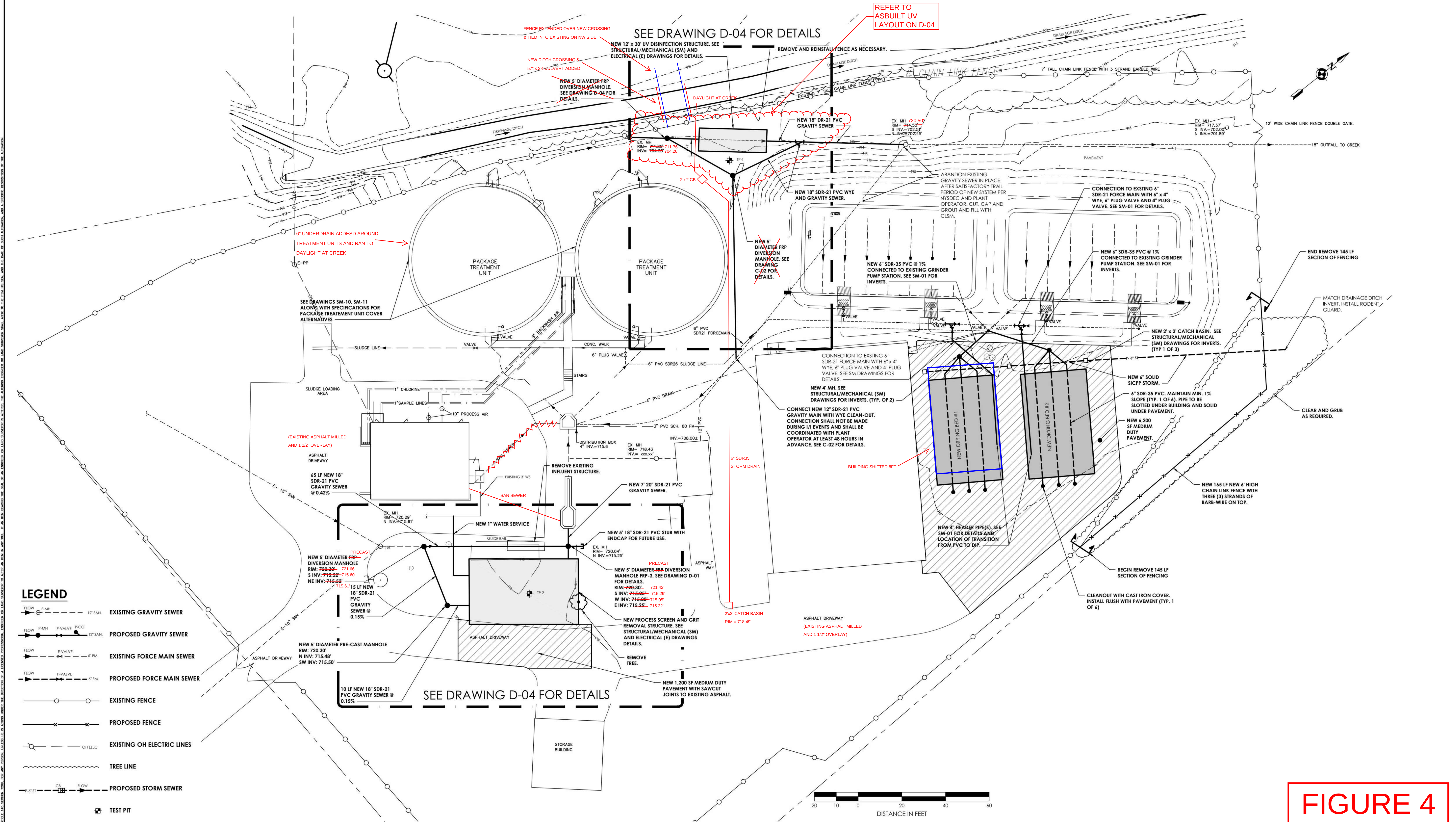


FIGURE 4

REVISIONS					Mountain Engineering, PLLC Infrastructure - Water - Wastewater - Environment 23 Jackson Street, Suite 201 Batavia NY 14020 Office: 585-219-4030 Cell: 585-755-6408 www.mountainengr.com			VILLAGE OF OAKFIELD WASTEWATER COLLECTION AND TREATMENT PLANT PHASE 1 IMPROVEMENTS 37 MAIN STREET OAKFIELD, NEW YORK 14125 GENESEE COUNTY		DATE: 5/7/2018 DRAWN BY: BGR DESIGNED BY: SCL CHECKED BY: SJM SCALE: 1" = 20' (22 x 34)		GENERAL SITE PLAN		DRAWING NAME C DRAWING NUMBER 01	
NO.	DATE	BY	CHKD	DESCRIPTION											

ASBUILT



Figure 5

Village of Oakfield WWTF Process Flow Diagram

Figure 6

Village of Oakfield WWTF Hydraulic Profile

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW, ARTICLE 134, SECTION 7209, FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

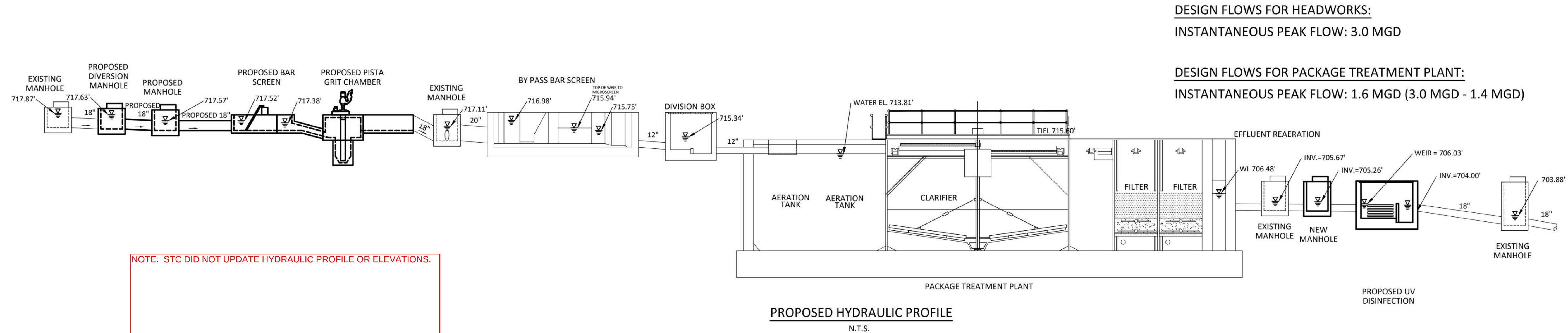
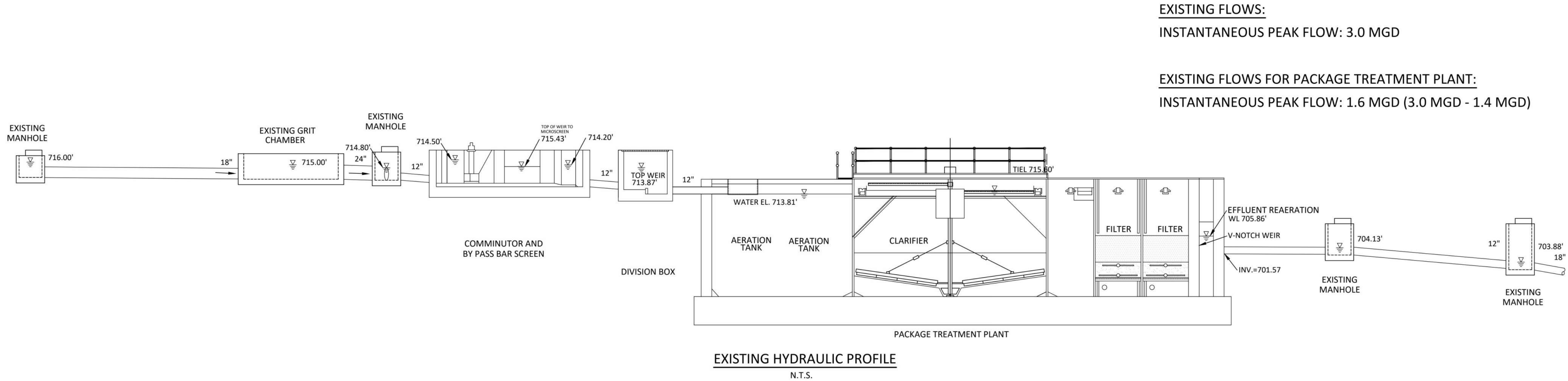
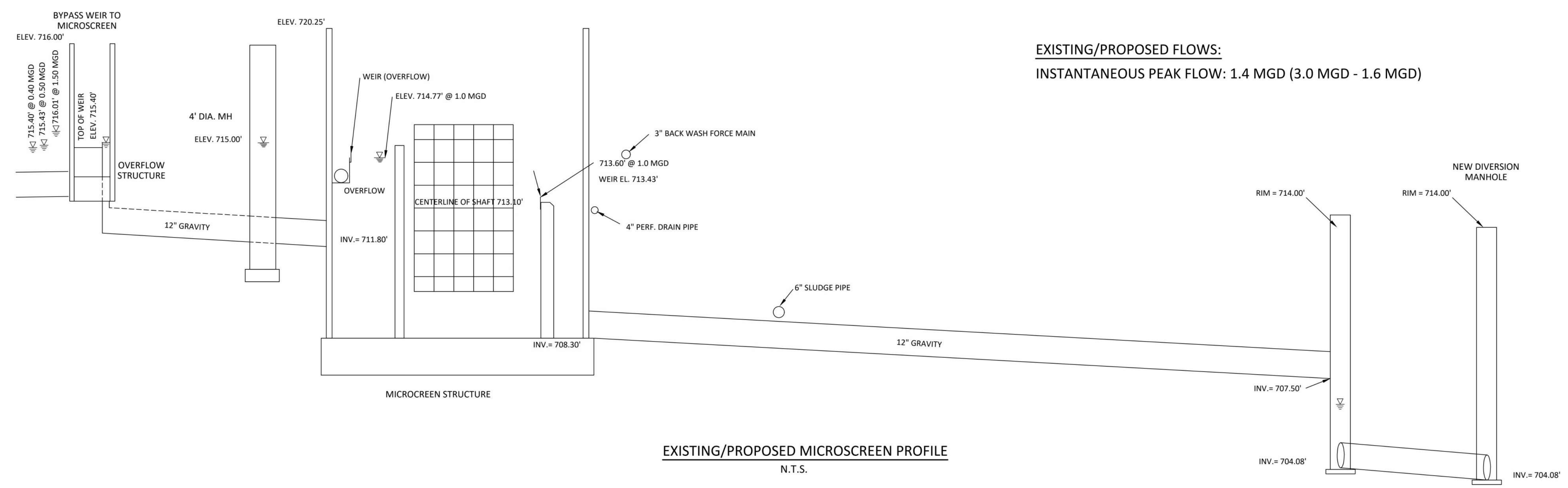


FIGURE 6 (p.1)

REVISIONS					 Mountain Engineering, PLLC Infrastructure - Water - Wastewater - Environment 23 Jackson Street, Suite 201 Batavia NY 14020 Office: 585-219-4030 Cell: 585-755-6408 www.mountainengineers.com			VILLAGE OF OAKFIELD WASTEWATER COLLECTION AND TREATMENT PLANT PHASE 1 IMPROVEMENTS 37 MAIN STREET OAKFIELD, NEW YORK 14125 GENESEE COUNTY	DATE: 5/7/2018 DRAWN BY: BGR DESIGNED BY: SCL CHECKED BY: SJM SCALE: N.T.S.	HYDRAULIC PROFILE 1 OF 2	DRAWING NAME
NO.	DATE	BY	CHKD	DESCRIPTION							H
											DRAWING NUMBER
											01



NOTE: STC DID NOT UPDATE HYDRAULIC PROFILE OR ELEVATIONS.

FIGURE 6 (p.2)

Figure 7

STAMP Onsite Sewer Hold and Haul Tank Location Map

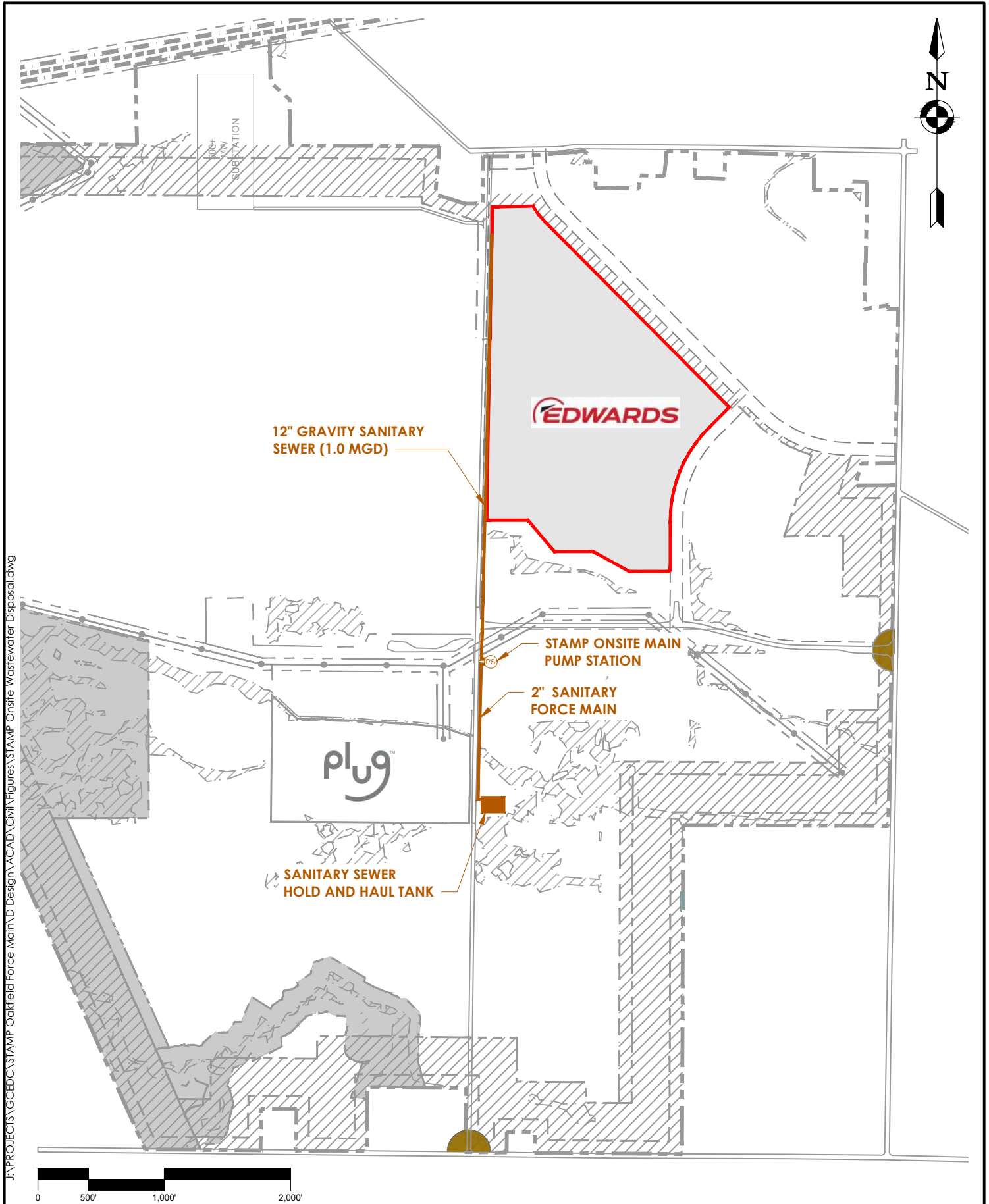


FIGURE 7

STAMP ONSITE HOLD & HAUL LOCATION MAP

STAMP FORCE MAIN OFFSITE SEWER

TOWN OF ALABAMA, GENESEE COUNTY, NEW YORK



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DATE: 06/22/2023

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SCALE: AS NOTED

PROJ. #: R20.15981.00

Figure 8

Oakfield Force Main Route Analysis Map

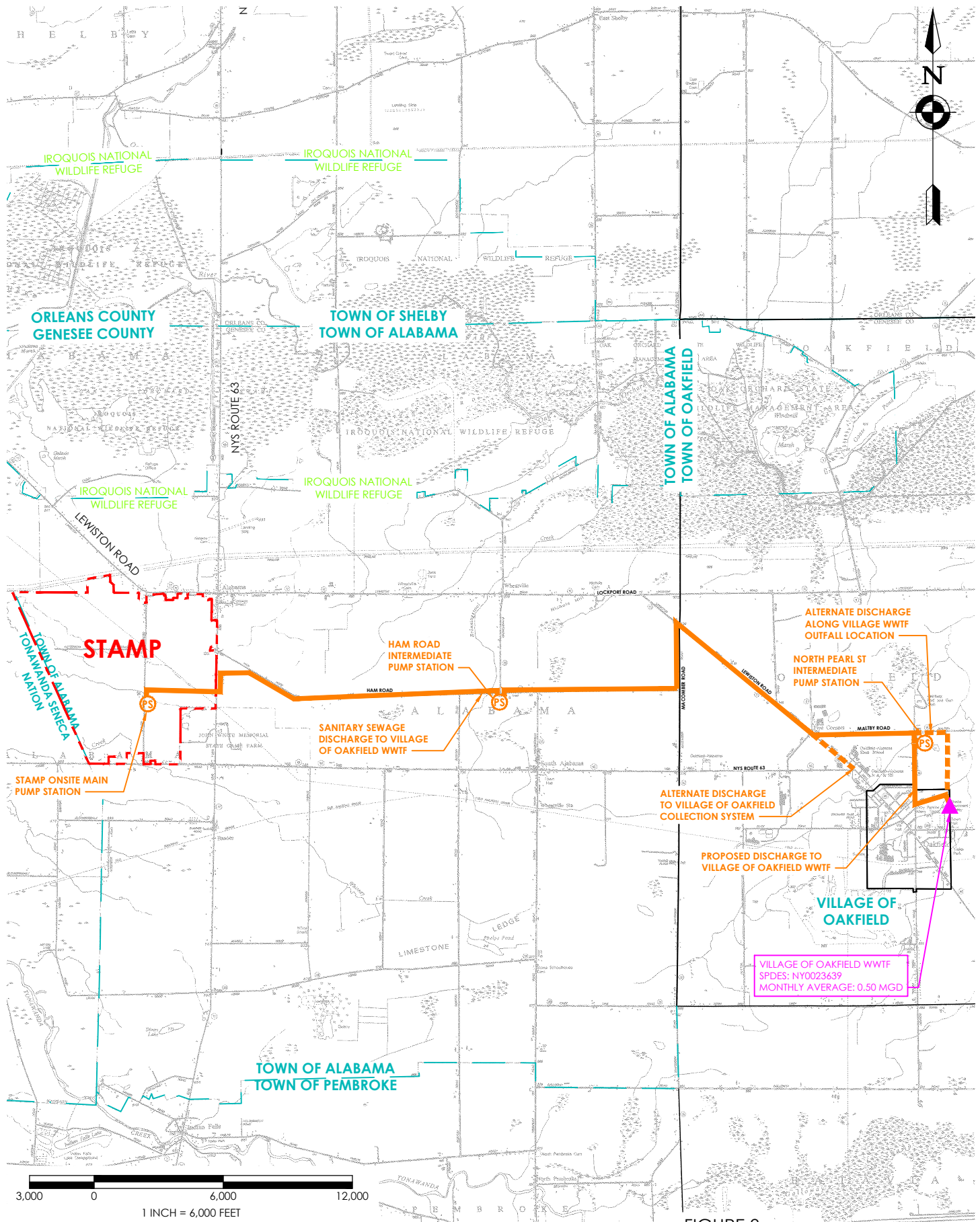


FIGURE 8



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CHECKED: ARK

SCALE: AS NOTED

PROJ. #: 15981.00

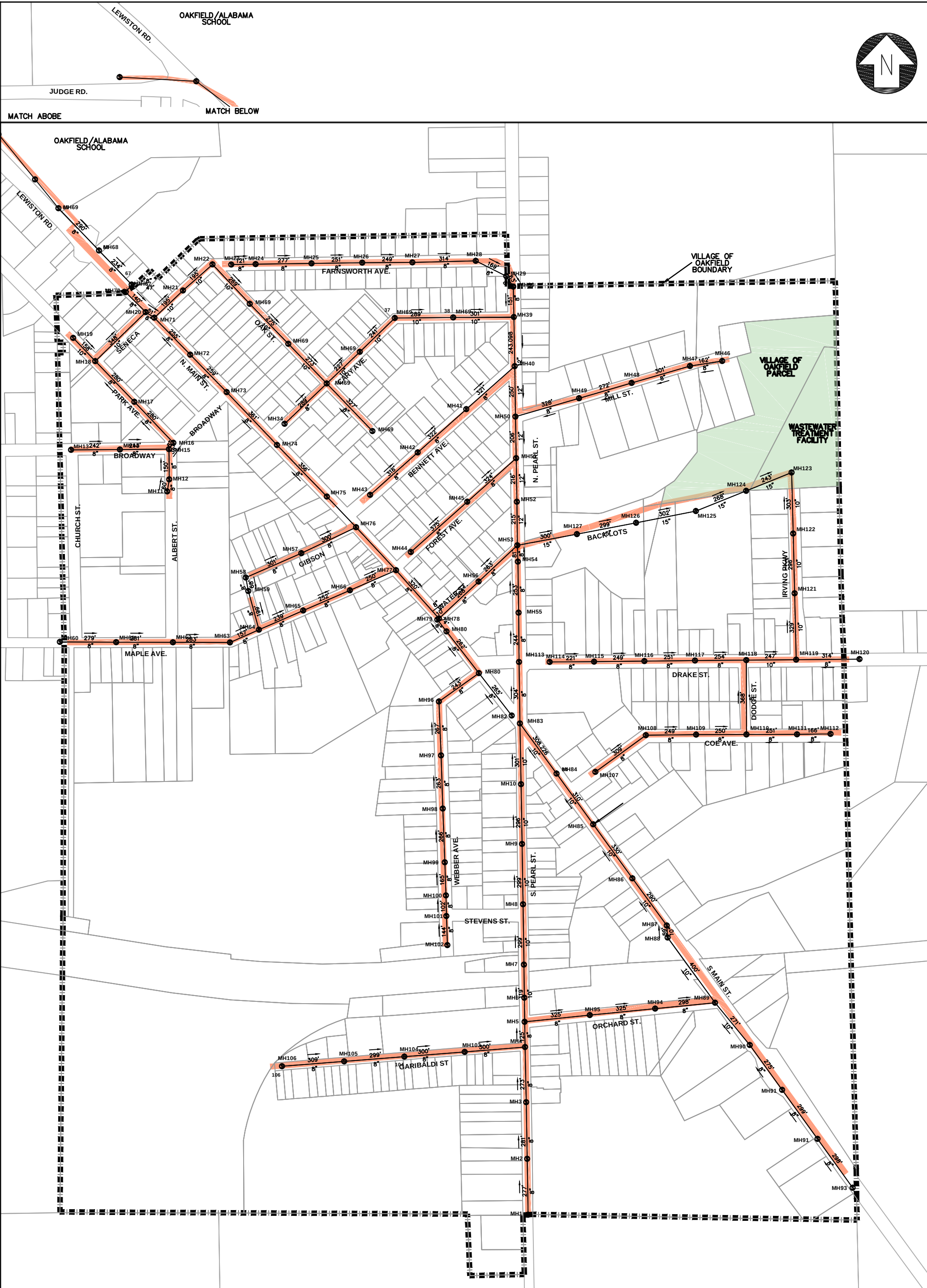
FORCE MAIN GENERAL LOCATION MAP

WNY STAMP OFFSITE SEWER

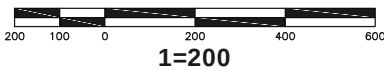
TOWN OF ALABAMA AND TOWN OF SHELBY, NEW YORK STATE

Appendix A

Village of Oakfield Sanitary Sewer Collection System Map



Village of Oakfield Sanitary Sewer System
FIGURE 2



Mountain
Engineering, PLLC
Infrastructure - Water - Wastewater - Environment
23 Jackson Street, Suite 201 Batavia NY 14020
Office: 585-219-4030 Cell: 585-755-6408
smountain@mountainengineers.com
www.mountainengineers.com

Appendix B

Village of Oakfield WWTF SPDES Permit



Department of
Environmental
Conservation

State Pollutant Discharge Elimination System (SPDES) DISCHARGE PERMIT

Industrial Code:	4952	SPDES Number:	NY0023639
Discharge Class (CL):	07	DEC Number:	8-1838-00002/00001
Toxic Class (TX):	N	Effective Date (EDP):	12/01/2015
Major Drainage Basin:	03	Expiration Date (ExDP):	11/30/2020
Sub Drainage Basin:	01	Modification Dates: (EDPM)	01/01/2018
Water Index Number:	ONT 138-28		
Compact Area:	N/A		

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et seq.) (hereinafter referred to as "the Act").

PERMITTEE NAME AND ADDRESS

Name:	Village of Oakfield	Attention:	Louis Moretti
Street:	37 Main Street		
City:	Oakfield	State:	NY
		Zip Code:	14125

is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS

Name:	Village of Oakfield Sewage Treatment Plant									
Location (C,T,V):	Oakfield (V)						County:	Genesee		
Facility Address:	19 Irving Parkway									
City:	Oakfield					State:	NY		Zip Code:	14125
From Outfall No.:	001		at Latitude:	43 °	04 ' 10 "	& Longitude:	78 °	15 ' 56 "		
into receiving waters known as:	Dry Brook (Trib Oak Orchard)							Class:	D	

in accordance with: effluent limitations; monitoring and reporting requirements; other provisions and conditions set forth in this permit; and 6 NYCRR Part 750-1 and 750-2.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESS

Mailing Name:	Village of Oakfield									
Street:	37 Main Street									
City:	Oakfield	State:	NY	Zip Code:	14125					
Responsible Official or Agent:	Louis Moretti				Phone:	(585) 356-8175				

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal not less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

CO BWP - Permit Coordinator
RWE
RPA
EPA Region II
NYSEFC
NYSDOH District Office

Deputy Chief Permit Administrator: Kent P. Sanders	
Address: Division of Environmental Permits 625 Broadway, 4 th Floor Albany, NY 12233-1750	
Signature: <i>Kent P. Sanders</i>	Date: 12/05/2017

PERMIT LIMITS, LEVELS AND MONITORING DEFINITIONS

OUTFALL	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
	This cell describes the type of wastewater authorized for discharge. Examples include process or sanitary wastewater, storm water, non-contact cooling water.	This cell lists classified waters of the state to which the listed outfall discharges.	The date this page starts in effect. (e.g. EDP or EDPM)	The date this page is no longer in effect. (e.g. ExDP)

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQ.	SAMPLE TYPE
e.g. pH, TRC, Temperature, D.O.	The minimum level that must be maintained at all instants in time.	The maximum level that may not be exceeded at any instant in time.	SU, °F, mg/l, etc.	See below	See below

PARAMETER	EFFLUENT LIMIT or CALCULATED LEVEL	COMPLIANCE LEVEL / MINIMUM LEVEL (ML)	ACTION LEVEL	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE
	Limit types are defined below in Note 1. The effluent limit is developed based on the more stringent of technology-based limits, required under the Clean Water Act, or New York State water quality standards. The limit has been derived based on existing assumptions and rules. These assumptions include receiving water hardness, pH and temperature; rates of this and other discharges to the receiving stream; etc. If assumptions or rules change the limit may, after due process and modification of this permit, change.	For the purposes of compliance assessment, the permittee shall use the approved EPA analytical method with the lowest possible detection limit as promulgated under 40CFR Part 136 for the determination of the concentrations of parameters present in the sample unless otherwise specified. If a sample result is below the detection limit of the most sensitive method, compliance with the permit limit for that parameter was achieved. Monitoring results that are lower than this level must be reported, but shall not be used to determine compliance with the calculated limit. This Minimum Level (ML) can be neither lowered nor raised without a modification of this permit.	Action Levels are monitoring requirements, as defined below in Note 2, which trigger additional monitoring and permit review when exceeded.	This can include units of flow, pH, mass, temperature, or concentration. Examples include µg/l, lbs/d, etc.	Examples include Daily, 3/week, weekly, 2/month, monthly, quarterly, 2/yr and yearly. All monitoring periods (quarterly, semiannual, annual, etc.) are based upon the calendar year unless otherwise specified in this Permit.	Examples include grab, 24 hour composite and 3 grab samples collected over a 6 hour period.

Notes:

1. EFFLUENT LIMIT TYPES:

- DAILY DISCHARGE:** The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for the purposes of sampling. For pollutants expressed in units of mass, the 'daily discharge' is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the 'daily discharge' is calculated as the average measurement of the pollutant over the day.
- DAILY MAX:** The highest allowable daily discharge.
- DAILY MIN:** The lowest allowable daily discharge.
- MONTHLY AVG:** The highest allowable average of daily discharges over a calendar month, calculated as the sum of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
- 7 DAY ARITHMETIC MEAN (7 day average):** The highest allowable average of daily discharges over a calendar week.
- 30 DAY GEOMETRIC MEAN:** The highest allowable geometric mean of daily discharges over a calendar month, calculated as the antilog of: the sum of the log of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
- 7 DAY GEOMETRIC MEAN:** The highest allowable geometric mean of daily discharges over a calendar week.
- 12 MONTH ROLLING AVERAGE:** The current monthly value of a parameter, plus the sum of the monthly values over the previous 11 months for that parameter, divided by 12.
- RANGE:** The minimum and maximum instantaneous measurements for the reporting period must remain between the two values shown.

- ACTION LEVELS:** Routine Action Level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted. If the additional monitoring requirement is triggered as noted below, the permittee shall undertake a short-term, high-intensity monitoring program for the parameter(s). Samples identical to those required for routine monitoring purposes shall be taken on each of at least three consecutive operating and discharging days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the third month following the month when the additional monitoring requirement was triggered. Results may be appended to the DMR or transmitted under separate cover to the same address. If levels higher than the Action Levels are confirmed, the permit may be reopened by the Department for consideration of revised Action Levels or effluent limits. The permittee is not authorized to discharge any of the listed parameters at levels which may cause or contribute to a violation of water quality standards.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL	LIMITATIONS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	All Year	Dry Brook (Trib Oak Orchard)	01/01/2018	11/30/2020

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Location		
								Inf.	Eff.	
Flow	Monthly Average	0.5	MGD			Continuous	N/A	X		
CBOD ₅	Daily Maximum	5	mg/l	21.0	lb/d	2/Month	6-hr. Comp.	X	X	(1)
Ammonia (as NH ₃)	Daily Maximum	15	mg/l			2/Month	6-hr. Comp.		X	
Solids, Suspended	Daily Maximum	10	mg/l	42.0	lb/d	2/Month	6-hr. Comp.	X	X	(1)
Dissolved Oxygen	Minimum	7.0	mg/l			2/Month	Grab		X	
Solids, Settleable	Daily Maximum	0.1	ml/l			1/Day	Grab	X	X	
pH	Range	6.0 – 9.0	SU			1/Day	Grab	X	X	
Temperature	Daily Maximum	Monitor	Deg C			1/Day	Grab	X	X	
Effluent Disinfection required		[] All Year		[X] Seasonal from May 1 to Oct 31						
Coliform, Fecal	30-Day Geometric Mean	200	No./ 100 ml			2/Month	Grab		X	(2)
Coliform, Fecal	7 Day Geometric Mean	400	No./ 100 ml			2/Month	Grab		X	(2)
Chlorine, Total Residual	Monthly Average	Monitor	mg/l	Monitor	lbs/day	1/Day	Grab		X	(2,3)
	Daily Maximum	0.020		Monitor						

FOOTNOTES:

- (1) Effluent shall not exceed 15 % and 15 % of influent concentration values for CBOD₅ & TSS respectively.
- (2) Limits and monitoring requirements are not in effect until May 1, 2020. See the schedule of compliance on page 8.
- (3) Total residual chlorine monitoring is only required if using chlorine for disinfection or other means.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL	LIMITATIONS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	Apply during extended periods of wet weather when the influent flows exceed 0.5 MGD and the effluent of the treatment plant is combined with the effluent of the microstreams.	Dry Brook (Trib Oak Orchard)	01/01/2018	11/30/2022

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Location		
								Inf.	Eff.	
Flow		Monitor	MGD			Continuous	N/A	X		
CBOD ₅	Daily Maximum	15	mg/l			One per event	Grab		X	(1)
Ammonia (as NH ₃)	Daily Maximum	2.0	mg/l			One per event	Grab		X	
Solids, Suspended	Daily Maximum	15	mg/l			One per event	Grab		X	(1)
Dissolved Oxygen	Minimum	7.0	mg/l			One per event	Grab		X	
Solids, Settleable	Daily Maximum	0.3	ml/l			One per event	Grab		X	
pH	Range	6.0 – 9.0	SU			One per event	Grab		X	
Temperature		Monitor	Deg C			One per event	Grab		X	
Effluent Disinfection required		[X] All Year		[] Seasonal from May 1 to Oct 31						
Coliform, Fecal	30-Day Geometric Mean	200	No./ 100 ml			Once per event	Grab		X	(2)
Coliform, Fecal	7 Day Geometric Mean	400	No./ 100 ml			Once per event	Grab		X	(2)
Chlorine, Total Residual	Daily Maximum	0.020	mg/l			Once per event	Grab		X	(2,3)

FOOTNOTES:

- (1) Effluent shall not exceed 15 % and 15 % of influent concentration values for CBOD₅ & TSS respectively.
- (2) Limits and monitoring requirements are not in effect until May 1, 2020. See the schedule of compliance on page 8.
- (3) If ultraviolet light disinfection (UV) is practiced instead of chemical disinfection, then total residual chlorine monitoring is not required.

Mercury Minimization Program for Low Priority POTWs

The permittee shall inspect each tributary dental facility at least once every five years to verify compliance with the wastewater treatment operation, maintenance, and notification elements of 6NYCRR Part 374.4. Inspection and/or outreach to other industrial/commercial sectors which may contribute mercury is also recommended. All new or increased tributary discharges, including hauled wastes, which are from sources that are industrial in nature must be evaluated for mercury content and, if levels exceed 500 ng/L, authorization must then be obtained from the Department prior to acceptance. Equipment and materials which may contain mercury shall also be evaluated by the permittee and replaced with mercury-free alternatives where environmentally preferable. A file shall be maintained containing the notices submitted by dental offices and all other pertinent information. This file shall be available for review by NYSDEC representatives and copies shall be provided upon request. A permit modification may be necessary to include more stringent requirements for POTWs which do not maintain low mercury effluent levels. Note: the mercury-related requirements in this permit conform to the mercury Multiple Discharge Variance specified in NYSDEC policy *DOW 1.3.10*.

DISCHARGE NOTIFICATION REQUIREMENTS

- (a) Except as provided in (c) and (g) of these Discharge Notification Act requirements, the permittee shall install and maintain identification signs at all outfalls to surface waters listed in this permit. Such signs shall be installed before initiation of any discharge.
- (b) Subsequent modifications to or renewal of this permit does not reset or revise the deadline set forth in (a) above, unless a new deadline is set explicitly by such permit modification or renewal.
- (c) The Discharge Notification Requirements described herein do not apply to outfalls from which the discharge is composed exclusively of storm water, or discharges to ground water.
- (d) The sign(s) shall be conspicuous, legible and in as close proximity to the point of discharge as is reasonably possible while ensuring the maximum visibility from the surface water and shore. The signs shall be installed in such a manner to pose minimal hazard to navigation, bathing or other water related activities. If the public has access to the water from the land in the vicinity of the outfall, an identical sign shall be posted to be visible from the direction approaching the surface water.

The signs shall have **minimum** dimensions of eighteen inches by twenty four inches (18" x 24") and shall have white letters on a green background and contain the following information:

N.Y.S. PERMITTED DISCHARGE POINT SPDES PERMIT No.: NY _____ OUTFALL No. : _____ For information about this permitted discharge contact: Permittee Name: _____ Permittee Contact: _____ Permittee Phone: () - ### - ##### OR: NYSDEC Division of Water Regional Office Address: NYSDEC Division of Water Regional Phone: () - ### - #####

- (e) For each discharge required to have a sign in accordance with a), the permittee shall, concurrent with the installation of the sign, provide a repository of copies of the Discharge Monitoring Reports (DMRs), as required by the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of this permit. This repository shall be open to the public, at a minimum, during normal daytime business hours. The repository may be at the business office repository of the permittee or at an off-premises location of its choice (such location shall be the village, town, city or county clerk's office, the local library or other location as approved by the Department). In accordance with the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of your permit, each DMR shall be maintained on record for a period of five years
- (f) The permittee shall periodically inspect the outfall identification sign(s) in order to ensure they are maintained, are still visible, and contain information that is current and factually correct. Signs that are damaged or incorrect shall be replaced within 3 months of inspection.

DISCHARGE NOTIFICATION REQUIREMENTS (continued)

- (g) All requirements of the Discharge Notification Act, including public repository requirements, are waived for any outfall meeting any of the following circumstances, provided Department notification is made in accordance with (h) below:
- (i) such sign would be inconsistent with any other state or federal statute;
 - (ii) the Discharge Notification Requirements contained herein would require that such sign could only be located in an area that is damaged by ice or flooding due to a one-year storm or storms of less severity;
 - (iii) instances in which the outfall to the receiving water is located on private or government property which is restricted to the public through fencing, patrolling, or other control mechanisms. Property which is posted only, without additional control mechanisms, does not qualify for this provision;
 - (iv) instances where the outfall pipe or channel discharges to another outfall pipe or channel, before discharge to a receiving water; or
 - (v) instances in which the discharge from the outfall is located in the receiving water, two-hundred or more feet from the shoreline of the receiving water.
- (h) If the permittee believes that any outfall which discharges wastewater from the permitted facility meets any of the waiver criteria listed in (g) above, notification (form enclosed) must be made to the Department's Bureau of Water Permits, 625 Broadway, Albany, N.Y. 12233-3505, of such fact, and, provided there is no objection by the Department, a sign and DMR repository for the involved outfall(s) are not required. This notification must include the facility's name, address, telephone number, contact, permit number, outfall number(s), and reason why such outfall(s) is waived from the requirements of discharge notification. The Department may evaluate the applicability of a waiver at any time, and take appropriate measures to assure that the ECL and associated regulations are complied with.

SCHEDULE OF COMPLIANCE

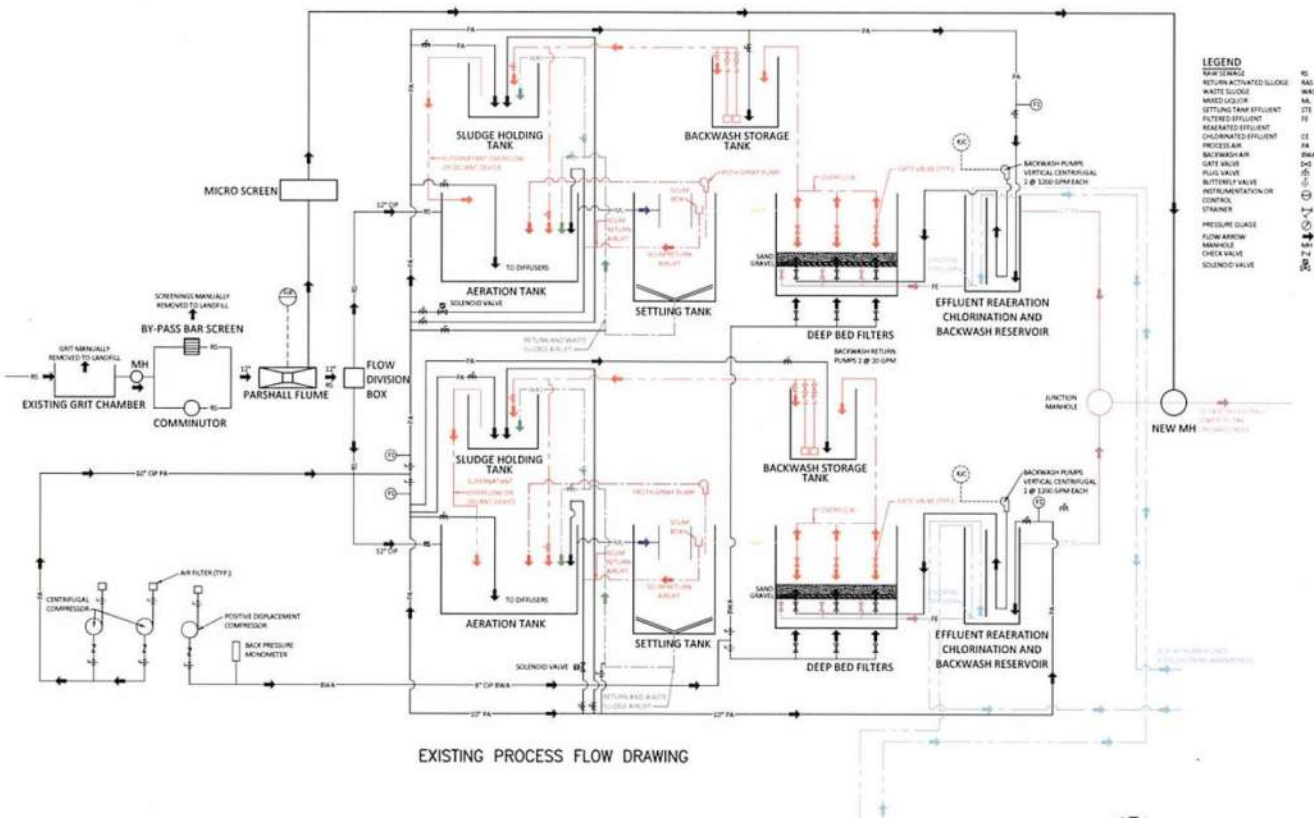
- a) The permittee shall submit the following information to the Regional Water Engineer at the address listed on the Recording, Reporting and Monitoring page of this Permit, and to the Bureau of Water Permits, 625 Broadway, Albany NY 12233-3505:

Outfall(s)	Parameter(s) Affected	Interim Effluent Limit(s)	Required Action	Due Date
001	Fecal Coliform Total Residual Chlorine	N/A	The permittee shall submit an approvable engineering report, prepared by a Professional Engineer licensed to practice engineering in New York State, detailing the disinfection designs that will be used to comply with the final effluent limitations for Fecal Coliform and Total Residual Chlorine.	May 1, 2019
			The permittee shall submit approvable Engineering Plans, Specifications, and Construction Schedule for the Implementation of effluent disinfection.	May 1, 2020
			The permittee shall begin construction of the treatment facilities in accordance with the Department approved schedule.	May 1, 2021
			The permittee shall complete construction and commence operation of the system, and comply with the final effluent limitations for Fecal Coliform and Total Residual Chlorine.	May 1, 2022
The above compliance actions are one time requirements. The permittee shall comply with the above compliance actions to the Department's satisfaction once. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT," the permittee is not required to repeat the submission(s) noted above. The above due dates are independent from the effective date of the permit stated in the "SPDES NOTICE/RENEWAL APPLICATION/PERMIT" letter.				

- b) For any action where the compliance date is greater than 9 months past the previous compliance due date, the permittee shall submit interim progress reports to the Department every nine (9) months until the due date for these compliance items are met.
- c) The permittee shall submit a written notice of compliance or non-compliance with each of the above schedule dates no later than 14 days following each elapsed date, unless conditions require more immediate notice as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2. All such compliance or non-compliance notification shall be sent to the locations listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS. Each notice of non-compliance shall include the following information:
1. A short description of the non-compliance;
 2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirements without further delay and to limit environmental impact associated with the non-compliance;
 3. A description or any factors which tend to explain or mitigate the non-compliance; and
 4. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that the permittee will meet the next scheduled requirement on time.
- d) The permittee shall submit copies of any document required by the above schedule of compliance to the NYSDEC Regional Water Engineer at the location listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS and to the Bureau of Water Permits, 625 Broadway, Albany, N.Y. 12233-3505, unless otherwise specified in this permit or in writing by the Department.

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the locations(s) specified below:



GENERAL REQUIREMENTS

- A. The regulations in 6 NYCRR Part 750 are hereby incorporated by reference and the conditions are enforceable requirements under this permit. The permittee shall comply with all requirements set forth in this permit and with all the applicable requirements of 6 NYCRR Part 750 incorporated into this permit by reference, including but not limited to the regulations in paragraphs B through I as follows:
- B. General Conditions
- | | |
|--|---|
| 1. Duty to comply | 6 NYCRR 750-2.1(e) & 2.4 |
| 2. Duty to reapply | 6 NYCRR 750-1.16(a) |
| 3. Need to halt or reduce activity not a defense | 6 NYCRR 750-2.1(g) |
| 4. Duty to mitigate | 6 NYCRR 750-2.7(f) |
| 5. Permit actions | 6 NYCRR 750-1.1(c), 1.18, 1.20 & 2.1(h) |
| 6. Property rights | 6 NYCRR 750-2.2(b) |
| 7. Duty to provide information | 6 NYCRR 750-2.1(i) |
| 8. Inspection and entry | 6 NYCRR 750-2.1(a) & 2.3 |
- C. Operation and Maintenance
- | | |
|-----------------------------------|--------------------------------------|
| 1. Proper Operation & Maintenance | 6 NYCRR 750-2.8 |
| 2. Bypass | 6 NYCRR 750-1.2(a)(17), 2.8(b) & 2.7 |
| 3. Upset | 6 NYCRR 750-1.2(a)(94) & 2.8(c) |
- D. Monitoring and Records
- | | |
|---------------------------|--|
| 1. Monitoring and records | 6 NYCRR 750-2.5(a)(2), 2.5(a)(6), 2.5(c)(1), 2.5(c)(2), & 2.5(d) |
| 2. Signatory requirements | 6 NYCRR 750-1.8 & 2.5(b) |
- E. Reporting Requirements
- | | |
|---|-----------------------------|
| 1. Reporting requirements for POTWs | 6 NYCRR 750-2.5, 2.7 & 1.17 |
| 2. Anticipated noncompliance | 6 NYCRR 750-2.7(a) |
| 3. Transfers | 6 NYCRR 750-1.17 |
| 4. Monitoring reports | 6 NYCRR 750-2.5(e) |
| 5. Compliance schedules | 6 NYCRR 750-1.14(d) |
| 6. 24-hour reporting | 6 NYCRR 750-2.7(c) & (d) |
| 7. Other noncompliance | 6 NYCRR 750-2.7(e) |
| 8. Other information | 6 NYCRR 750-2.1(f) |
| 9. Additional conditions applicable to a POTW | 6 NYCRR 750-2.9 |
- F. Planned Changes
- | | |
|---|--|
| 1. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when: | |
| a. The alteration or addition to the permitted facility may meet of the criteria for determining whether facility is a new source in 40 CFR §122.29(b); or | |
| b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, or to notification requirements under 40 CFR §122.42(a)(1); or | |
| c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. | |

In addition to the Department, the permittee shall submit a copy of this notice to the United States Environmental Protection Agency at the following address: U.S. EPA Region 2, Clean Water Regulatory Branch, 290 Broadway, 24th Floor, New York, NY 10007-1866.

GENERAL REQUIREMENTS *continued*

G. Notification Requirement for POTWs

1. All POTWs shall provide adequate notice to the Department and the USEPA of the following:
 - a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; or
 - b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
 - c. For the purposes of this paragraph, adequate notice shall include information on:
 - i. the quality and quantity of effluent introduced into the POTW, and
 - ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

POTWs shall submit a copy of this notice to the United States Environmental Protection Agency, at the following address:
U.S. EPA Region 2, Clean Water Regulatory Branch, 290 Broadway, 24th Floor, New York, NY 10007-1866

H. Sludge Management

The permittee shall comply with all applicable requirements of 6 NYCRR Part 360.

I. SPDES Permit Program Fee

The permittee shall pay to the Department an annual SPDES permit program fee within 30 days of the date of the first invoice, unless otherwise directed by the Department, and shall comply with all applicable requirements of ECL 72-0602 and 6 NYCRR Parts 480, 481 and 485. Note that if there is inconsistency between the fees specified in ECL 72-0602 and 6 NYCRR Part 485, the ECL 72-0602 fees govern.

J. Water Treatment Chemicals (WTCs)

New or increased use and discharge of a WTC requires prior Department review and authorization. At a minimum, the permittee must notify the Department in writing of its intent to change WTC use by submitting a completed *WTC Notification Form* for each proposed WTC. The Department will review that submittal and determine if a SPDES permit modification is necessary or whether WTC review and authorization may proceed outside of the formal permit administrative process. The majority of WTC authorizations do not require SPDES permit modification. In any event, use and discharge of a WTC shall not proceed without prior authorization from the Department. Examples of WTCs include biocides, coagulants, conditioners, corrosion inhibitors, defoamers, deposit control agents, flocculants, scale inhibitors, sequestrants, and settling aids.

1. WTC use shall not exceed the rate explicitly authorized by this permit or otherwise authorized in writing by the Department.
2. The permittee shall maintain a logbook of all WTC use, noting for each WTC the date, time, exact location, and amount of each dosage, and, the name of the individual applying or measuring the chemical. The logbook must also document that adequate process controls are in place to ensure that excessive levels of WTCs are not used.
3. The permittee shall submit a completed WTC Annual Report Form each year that they use and discharge WTCs. This form shall be attached to either the December DMR or the annual monitoring report required below.

The *WTC Notification Form* and *WTC Annual Report Form* are available from the Department's website at:

<http://www.dec.ny.gov/permits/93245.html>

RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

- A. The monitoring information required by this permit shall be summarized, signed and retained for a period of at least five years from the date of the sampling for subsequent inspection by the Department or its designated agent. **Also, monitoring information required by this permit shall be summarized and reported by submitting;**

☒ (if box is checked) completed and signed Discharge Monitoring Report (DMR) forms for each 1 month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.

☐ (if box is checked) an annual report to the Regional Water Engineer at the address specified below. The annual report is due by February 1 each year and must summarize information for January to December of the previous year in a format acceptable to the Department.

☒ (if box is checked) a monthly "Wastewater Facility Operation Report..." (form 92-15-7) to the:

☒ Regional Water Engineer and/or ☒ County Health Department or Environmental Control Agency specified below

Send the **original** (top sheet) of each DMR page to:

Department of Environmental Conservation
Division of Water, Bureau of Water Compliance
625 Broadway
Albany, New York 12233-3506
Phone: (518) 402-8177

Send the **first copy** (second sheet) of each DMR page to:

Department of Environmental Conservation
Regional Water Engineer, Region 8
6274 E Avon-Lima Rd
Avon, New York 14414 -9519
Phone: (585) 226-5468

Send an **additional copy** of each DMR page to:

Genesee Co. Health Department
3837 West Main Street Road
Batavia, New York 14020
Phone: (585) 344-2580

- B. Monitoring and analysis shall be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.
- C. More frequent monitoring of the discharge(s), monitoring point(s), or waters of the State than required by the permit, where analysis is performed by a certified laboratory or where such analysis is not required to be performed by a certified laboratory, shall be included in the calculations and recording of the data on the corresponding DMRs.
- D. Calculations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.
- E. Unless otherwise specified, all information recorded on the DMRs shall be based upon measurements and sampling carried out during the most recently completed reporting period.
- F. Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section 502 of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be directed to the New York State Department of Health, Environmental Laboratory Accreditation Program.

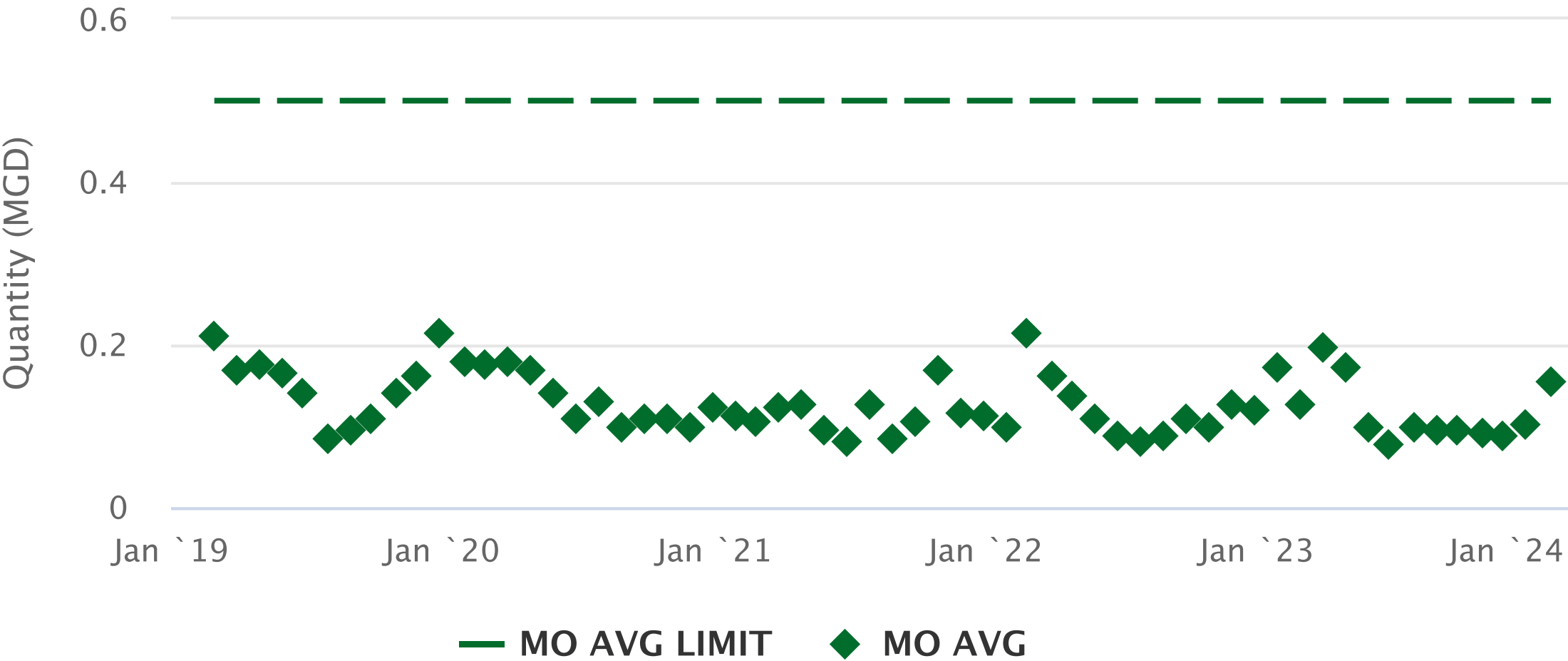
Appendix C

Village of Oakfield WWTF Influent and Effluent Charts

OAKFIELD (V) STP (NY0023639) 001 – Flow, in conduit or thru treatment plant – Raw Sewage Influent – Quantity

Late/Missing Reports Timeline

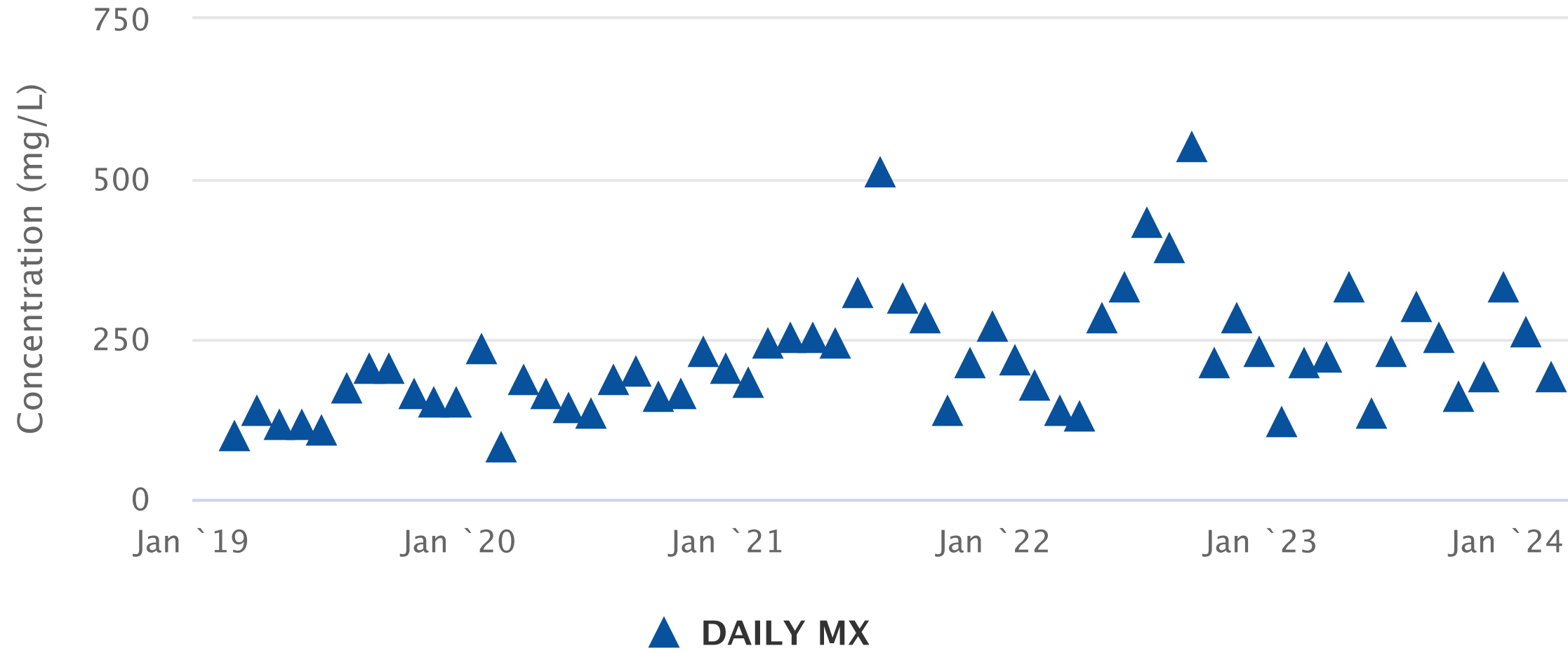
Non-Numeric Value Timeline



OAKFIELD (V) STP (NY0023639) 001 – BOD, carbonaceous [5 day, 20 C] – Raw Sewage Influent – Concentration

Late/Missing Reports Timeline

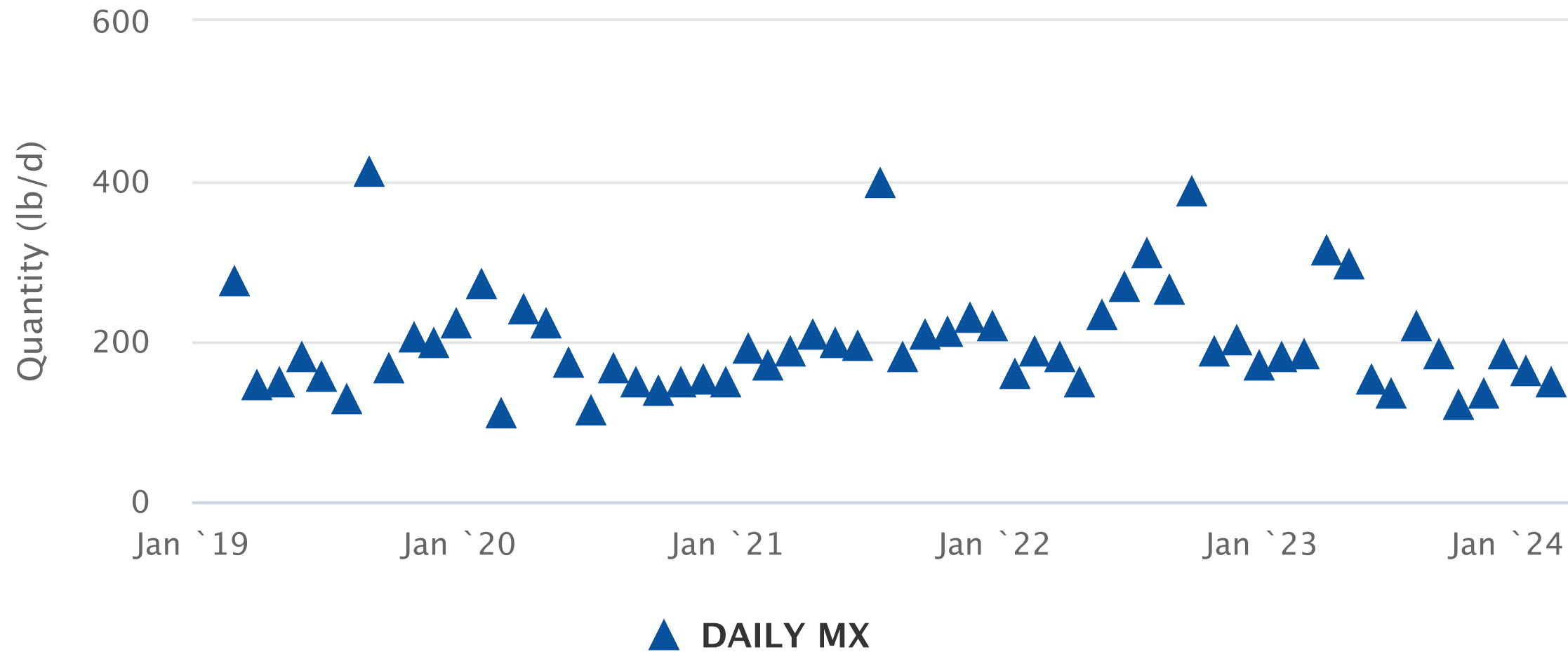
Non-Numeric Value Timeline



OAKFIELD (V) STP (NY0023639) 001 – BOD, carbonaceous [5 day, 20 C] – Raw Sewage Influent – Quantity

Late/Missing Reports Timeline

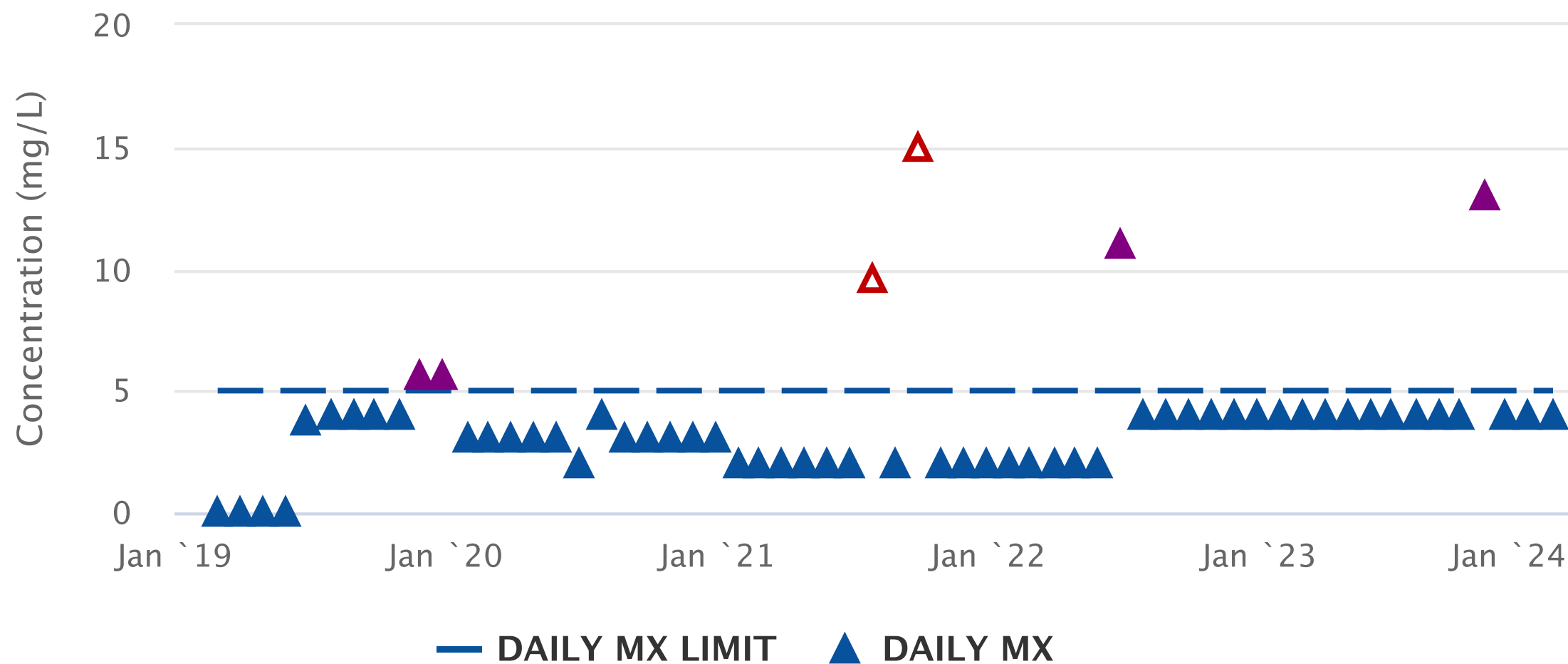
Non-Numeric Value Timeline



OAKFIELD (V) STP (NY0023639) 001 – BOD, carbonaceous [5 day, 20 C] – Effluent Gross – Concentration

Late/Missing Reports Timeline

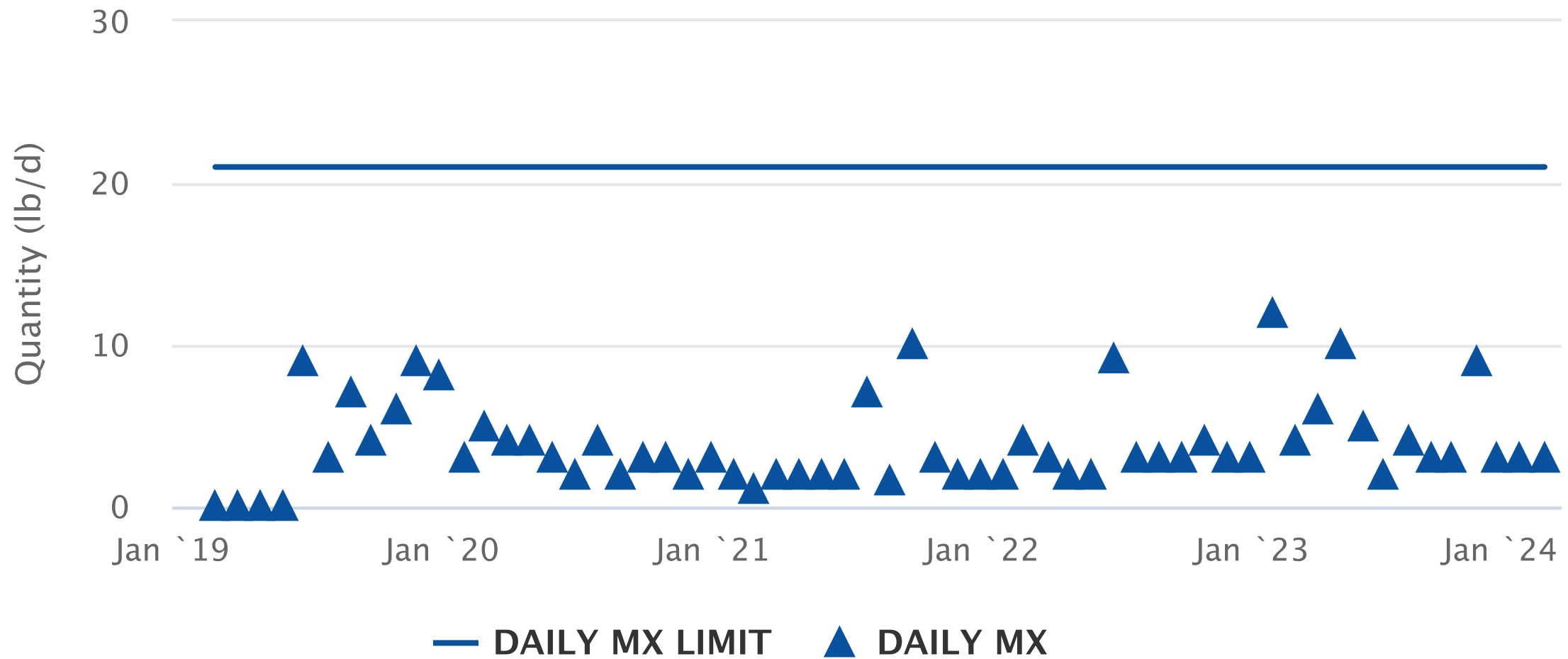
Non-Numeric Value Timeline



OAKFIELD (V) STP (NY0023639) 001 – BOD, carbonaceous [5 day, 20 C] – Effluent Gross – Quantity

Late/Missing Reports Timeline

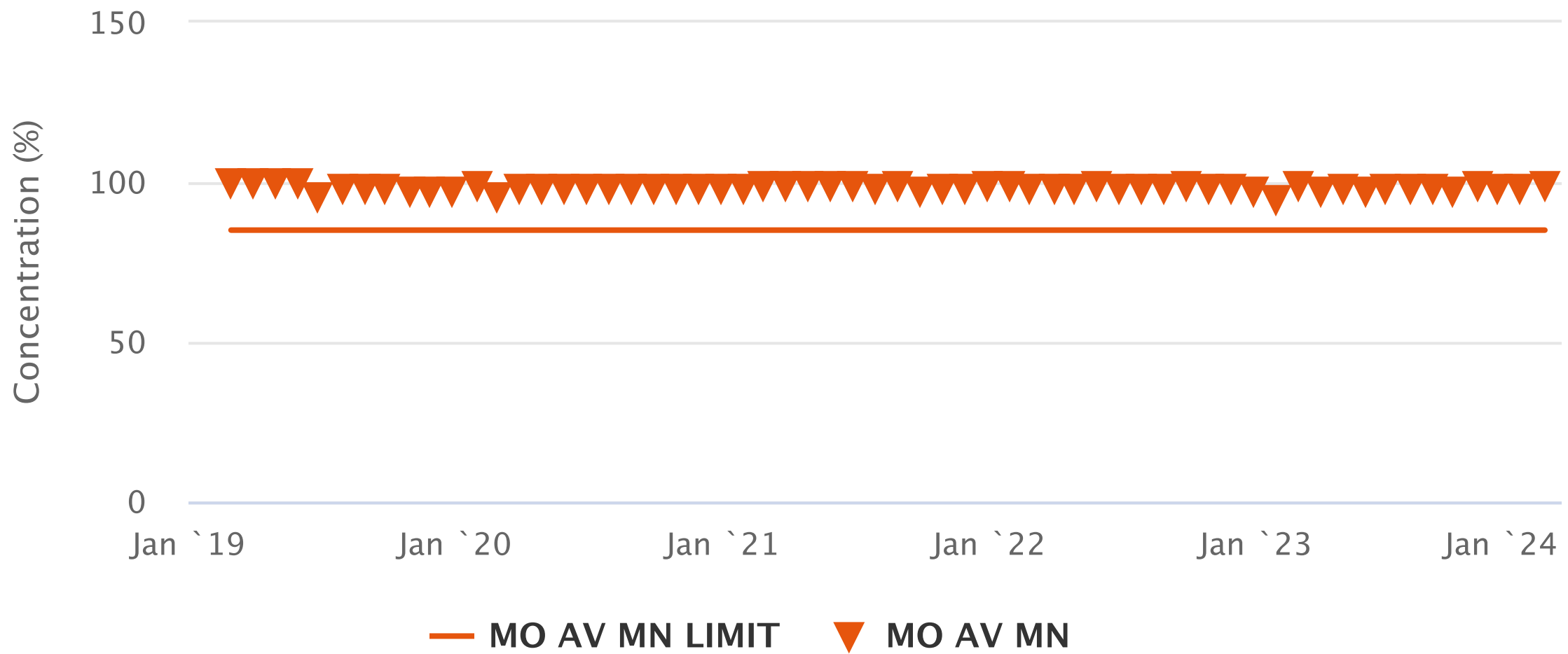
Non-Numeric Value Timeline



OAKFIELD (V) STP (NY0023639) 001 – Carbonaceous oxygen demand, % removal – Percent Removal – Concentration

Late/Missing Reports Timeline

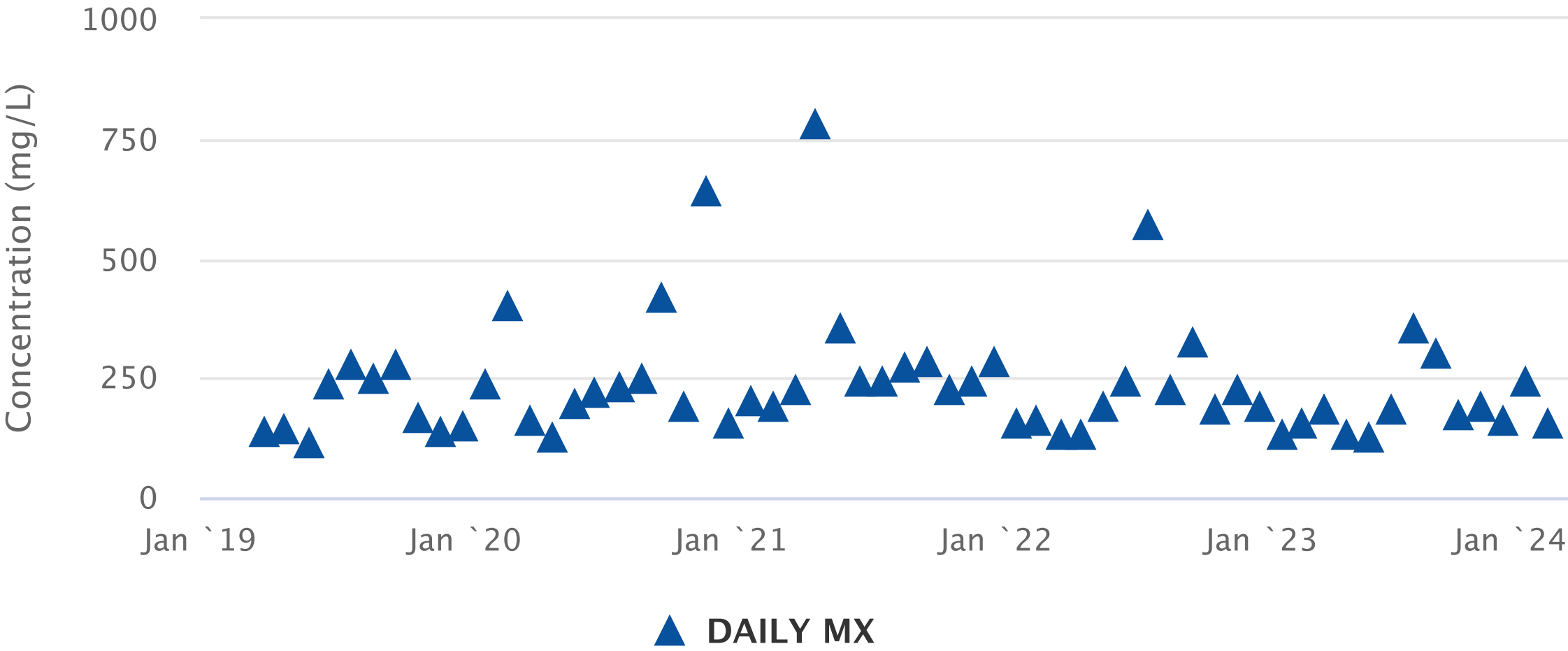
Non-Numeric Value Timeline



OAKFIELD (V) STP (NY0023639) 001 – Solids, total suspended – Raw Sewage Influent – Concentration

Late/Missing Reports Timeline

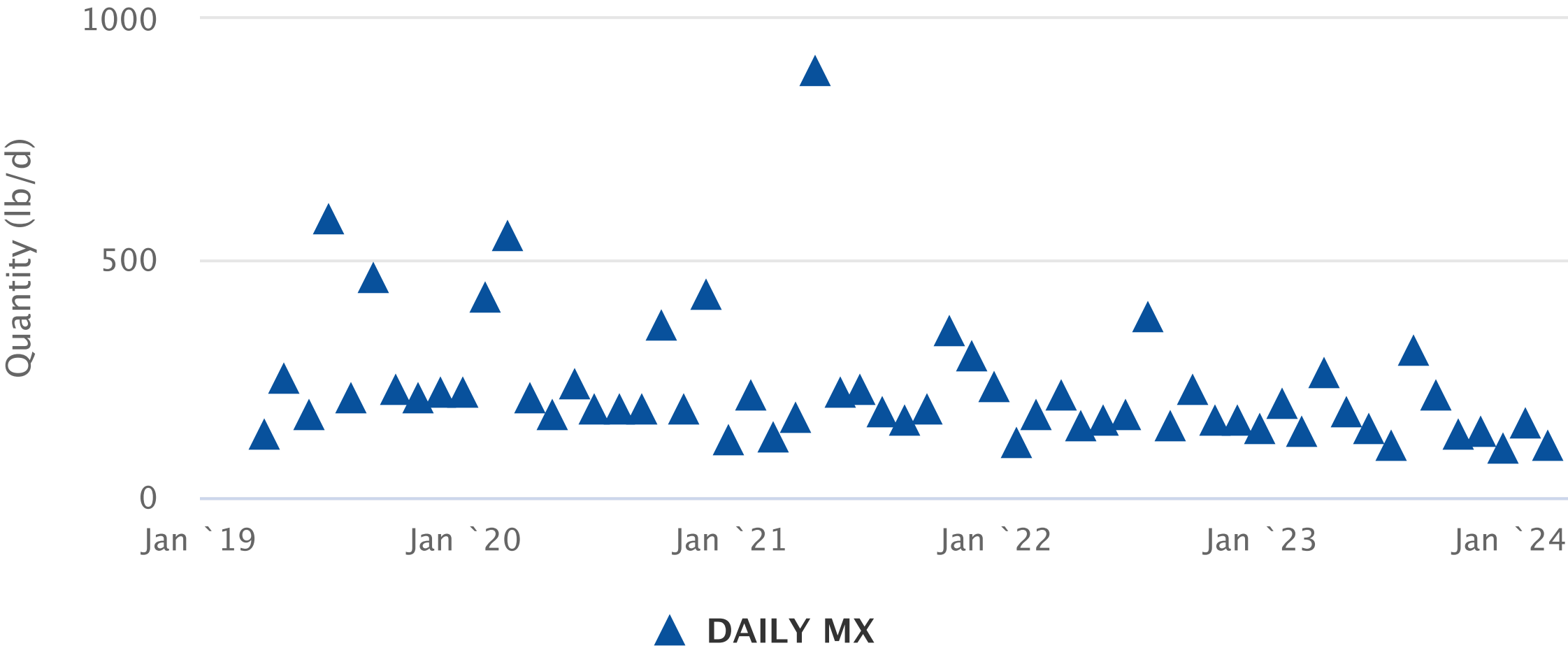
Non-Numeric Value Timeline



OAKFIELD (V) STP (NY0023639) 001 – Solids, total suspended – Raw Sewage Influent – Quantity

Late/Missing Reports Timeline

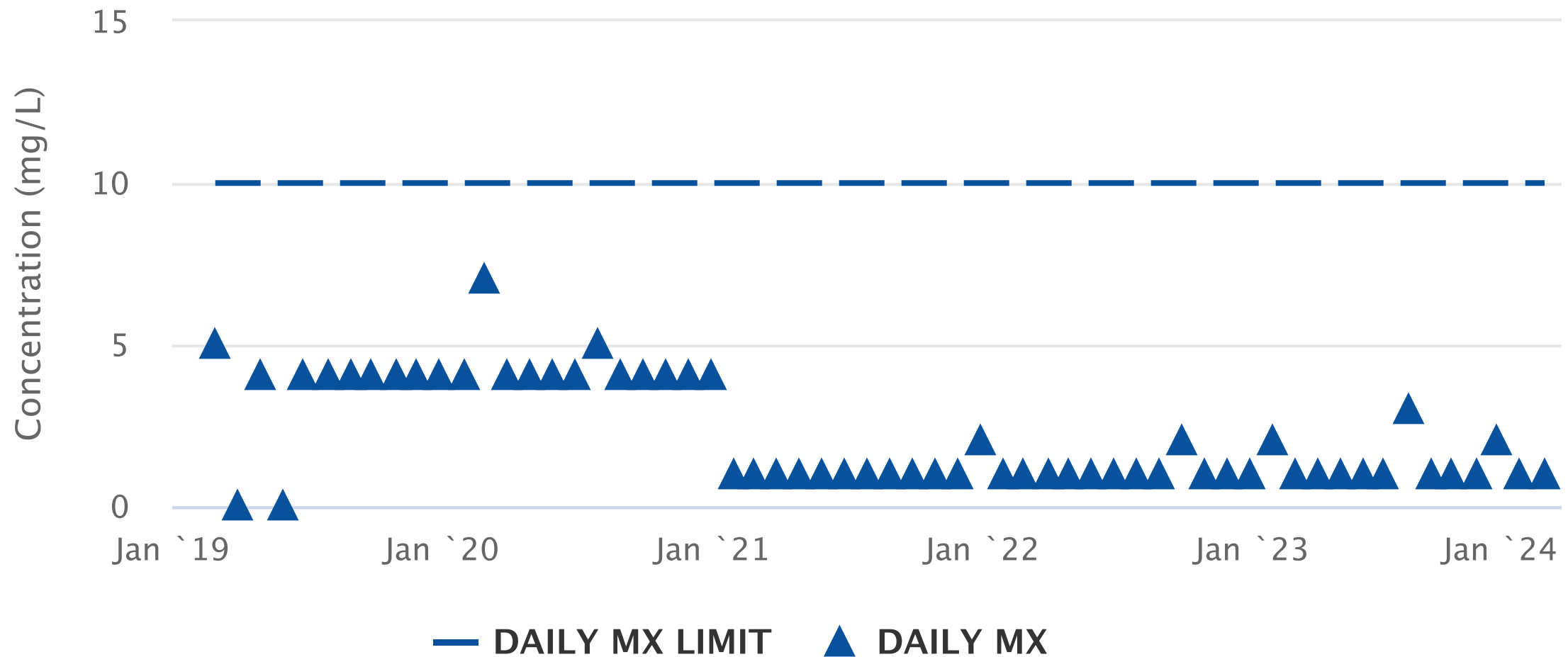
Non-Numeric Value Timeline



OAKFIELD (V) STP (NY0023639) 001 – Solids, total suspended – Effluent Gross – Concentration

Late/Missing Reports Timeline

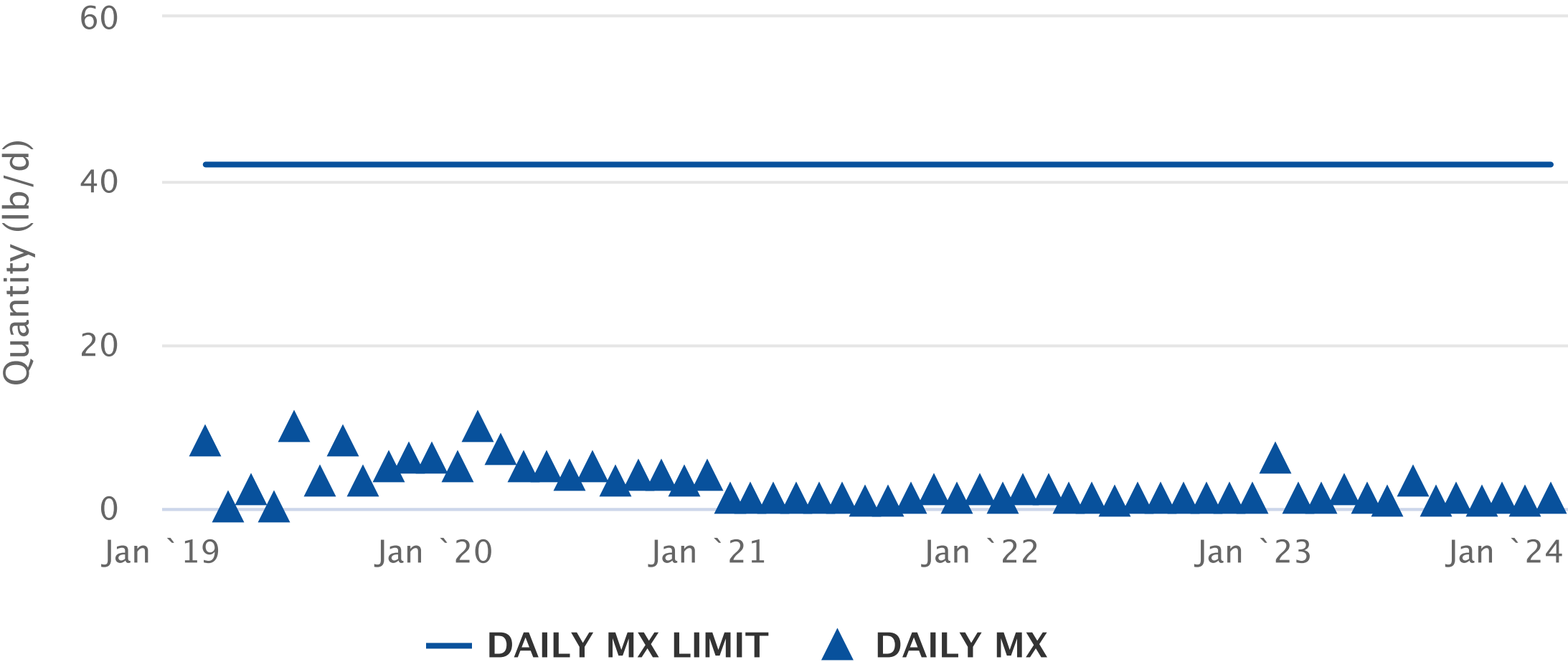
Non-Numeric Value Timeline



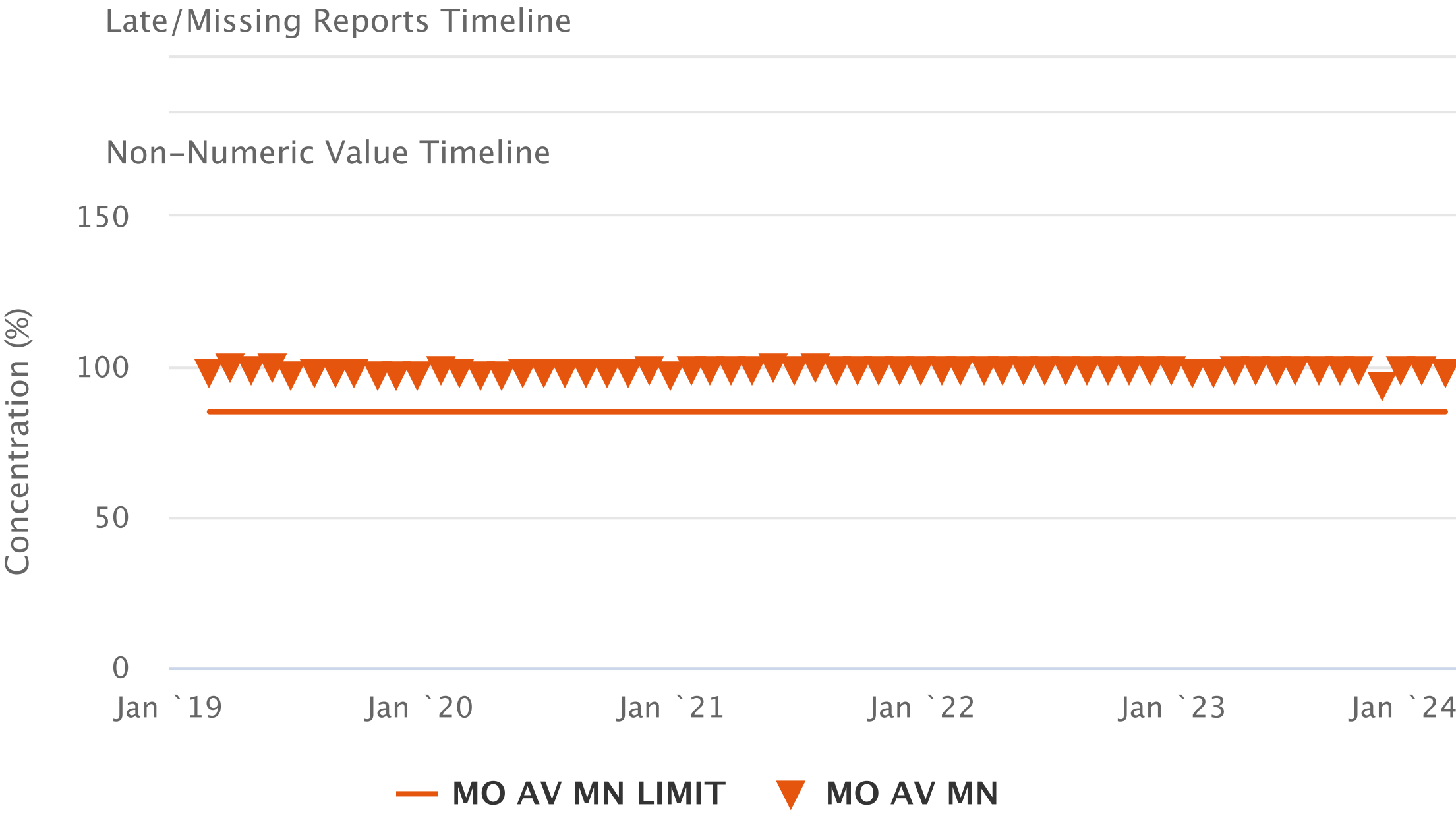
OAKFIELD (V) STP (NY0023639) 001 – Solids, total suspended – Effluent Gross – Quantity

Late/Missing Reports Timeline

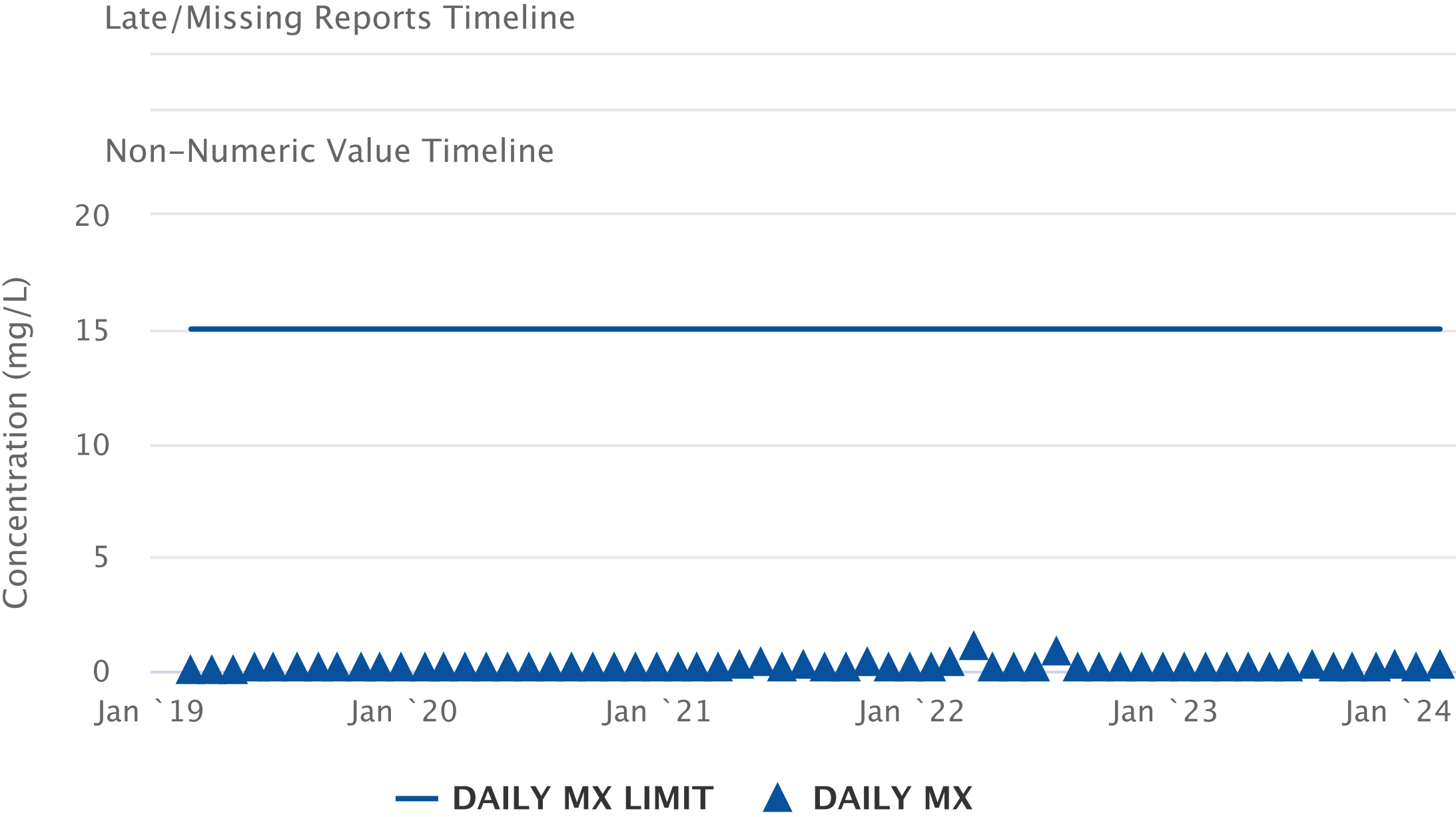
Non-Numeric Value Timeline



OAKFIELD (V) STP (NY0023639) 001 – Solids, suspended percent removal – Percent Removal – Concentration



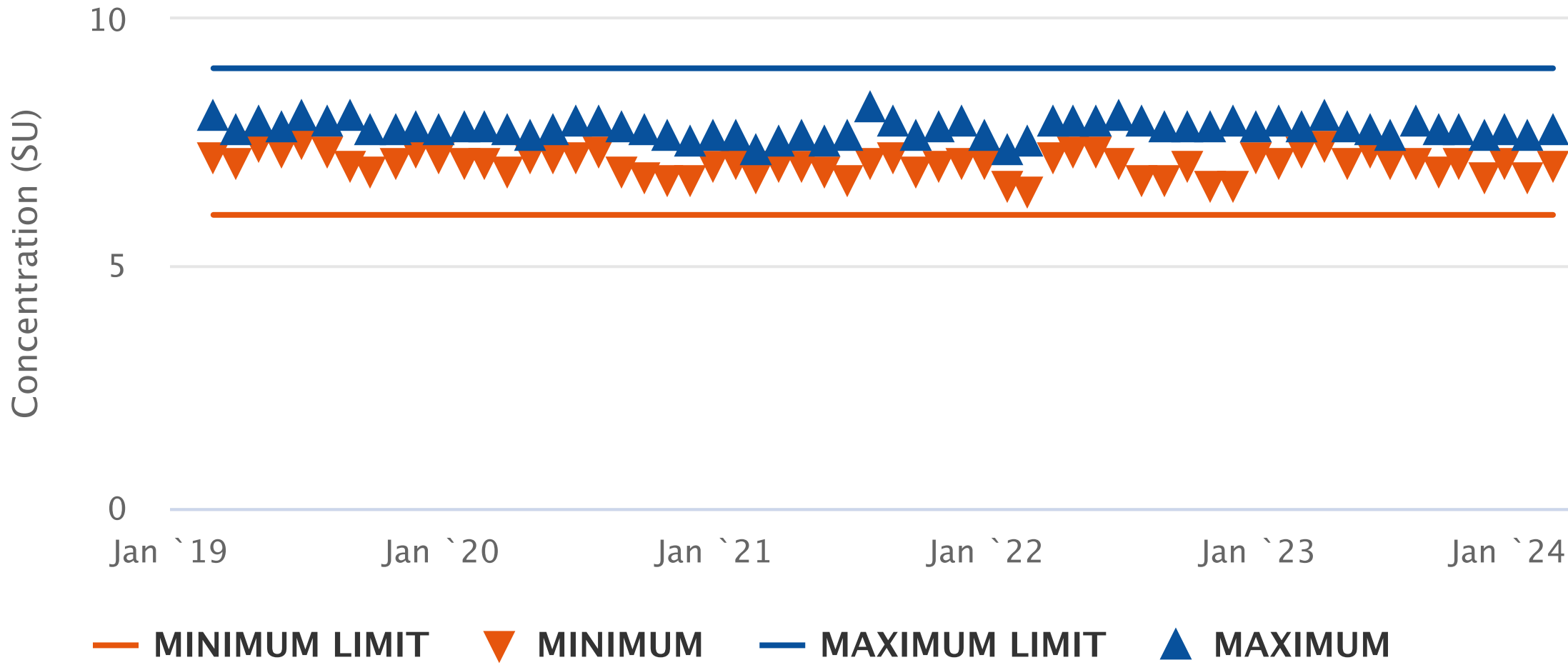
OAKFIELD (V) STP (NY0023639) 001 – Nitrogen, ammonia, total [as NH3] – Effluent Gross – Concentration



OAKFIELD (V) STP (NY0023639) 001 - pH - Effluent Gross - Concentration

Late/Missing Reports Timeline

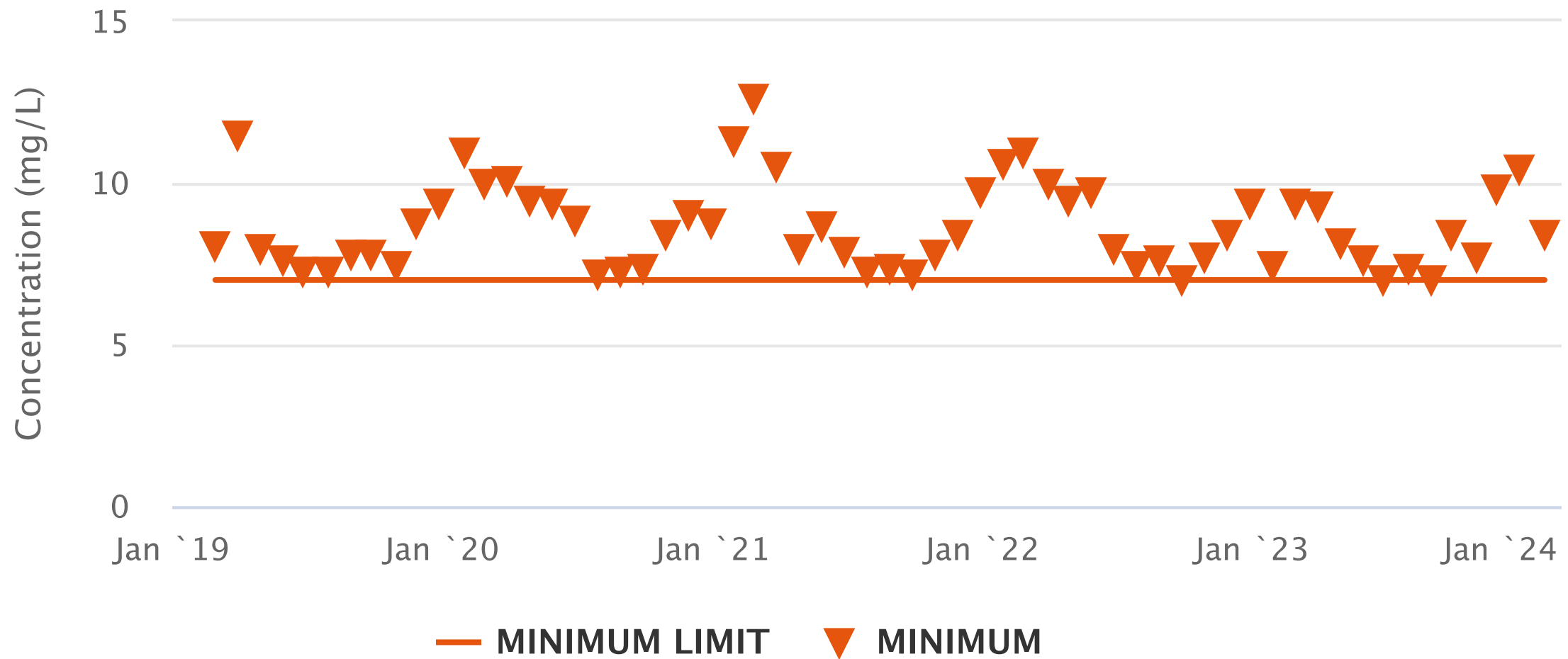
Non-Numeric Value Timeline



OAKFIELD (V) STP (NY0023639) 001 – Oxygen, dissolved [DO] – Effluent Gross – Concentration

Late/Missing Reports Timeline

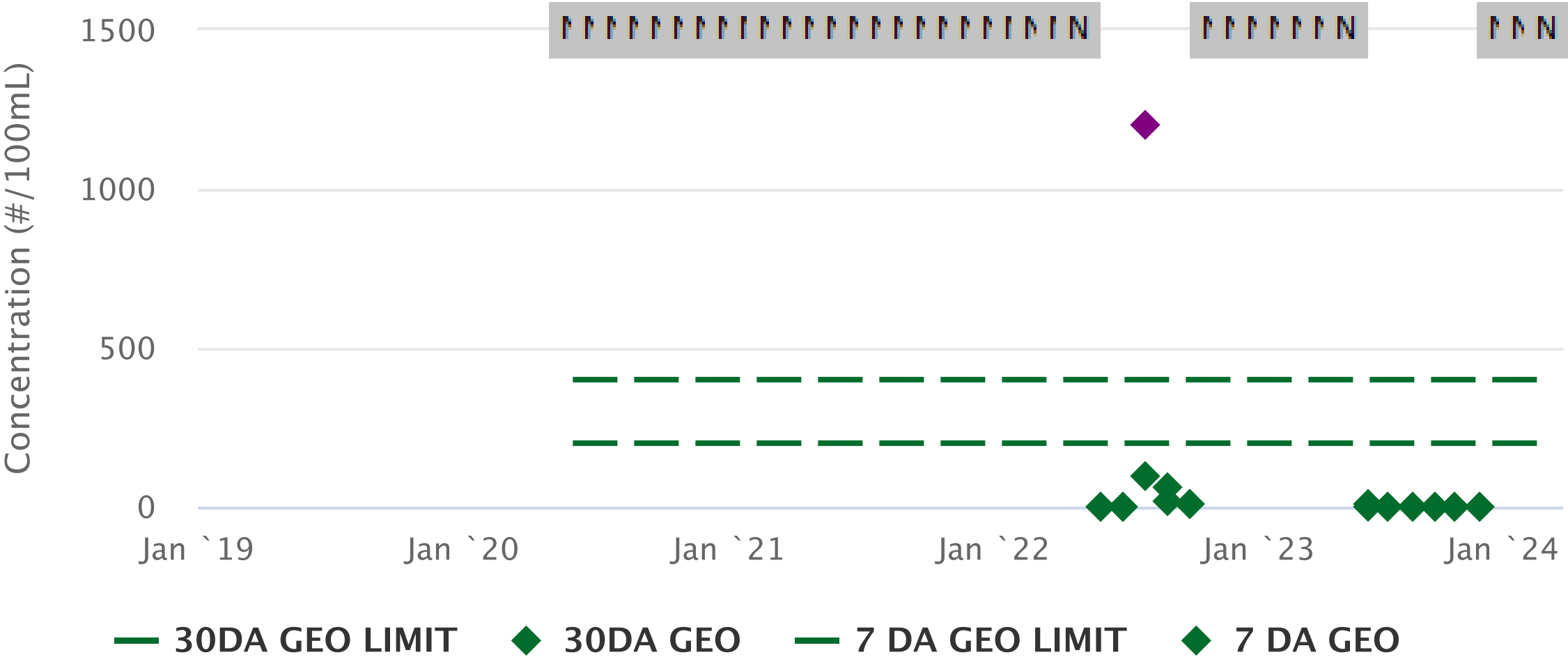
Non-Numeric Value Timeline



OAKFIELD (V) STP (NY0023639) 001 – Coliform, fecal general – Effluent Gross – Concentration

Late/Missing Reports Timeline

Non-Numeric Value Timeline



Appendix D

Village of Oakfield WWTF Design Average Flows

Source	Type of Use	Unit	Unit Flow (gpd)	# Units	Design Average Flow (gpd)	Flow Scenario	
						1	2
						Existing Flows	Exist Flows + STAMP Initial Build
						Design Average Flow (gpd)	Design Average Flow (gpd)
Existing Oakfield WWTF Flows	Existing Flows based on 5 year average ¹				130,000	130,000	130,000
STAMP							
<u>Initial Build</u>							
Plug Power							
Factory Workers	Factory, no showers, no cafeteria	Per employee/shift	15	62	930		
Truck drivers	Truck Drivers	Per employee/shift	5	38	190		
Edwards Vacuum							
Phase 1	Factory, no showers, cafeteria provided	Per employee/shift	20	380	7,600		
Future Project ²	Assumed Factory, with showers	Per employee/shift	25	450	11,250		
Subtotal				930	19,970		
Subtotal (Rounded)					20,000		20,000
TOTAL WWTF FLOW						130,000	150,000
<u>Notes</u> ¹ Average flow obtained from USEPA ECHO online system for 5-year period from February 2019 to January 2024 was 0.127 MGD, which was rounded to 0.130 MGD. ² For Future Project, assumed Factory with showers, and a similar number of employees to Edwards Vacuum plus a safety factor, to be conservative.							

Appendix E

Village of Oakfield WWTF Packaged Wastewater Treatment Units Original (1979) Design Criteria

and explosive mixtures. Observe the safety requirements of OSHA, NYSDEC and other organizations concerned with sewer maintenance and safety. A manhole is a confined space and all regulations pertaining to such areas should be observed before entering, (Chapter X, Safety).

TREATMENT FACILITIES DESIGN CRITERIA

General

Criteria utilized for the design of the facilities appears as Exhibit "D" of this manual.

The design criteria is based on a projected population of 2,800 people in the design year of 1995. Provision is included in the recommended design population figure for growth within the Village plus an allowance for cluster development in the Town of Oakfield. The average design dry weather flow is 0.34 mgd (million gallons per day).

Hydraulic Capacity and Removal Efficiency

The facilities are capable of removing 98 percent of the BOD contained in an average dry weather flow of 0.34 mgd originating from an equivalent population of 2,800 persons located in the Village of Oakfield and the serviced portions of the Town of Oakfield.

Flows of 1.10 mgd can be handled without the flooding of any control weirs or taxing the hydraulic capacity of flumes, piping, etc.

Organic Loadings

The design of the facilities was based on average daily organic loadings of 476 pounds of BOD and 560 pounds of suspended solids.

HEADWORKS

General

The headworks receive the flows from the gravity sewers, remove the coarse debris which would interfere with the treatment processes, and meter the flow. The

VILLAGE OF OAKFIELD
WASTEWATER TREATMENT FACILITIES

DESIGN CRITERIA

1. Design Population 2,800

Hydraulic

2. Average Raw Sewage Flow, MGD 0.34
3. Maximum Total Flow, MGD 1.10

Organic

4. Total BOD, lb./day 480
5. Total Suspended Solids, lb./day 560

Secondary Treatment Facilities
Aeration Tanks

6. BOD to Aeration Tanks, lb./day 480
7. BOD to Suspended Solids Ratio,
lb./day/100 lb./solids 8
8. Suspended Solids Required, lb. 6,000
9. Solids Concentration in Mixed Liquor, mg/l 2,116
10. Number of Aeration Tanks 2
11. Surface Area of Tank, sq. ft. 1,635
12. Depth of Tank, Feet 13.90
13. Total Volume of Tanks, Gal. x 10⁶ 0.34
14. Sludge Return Rate, Percent 100
15. Mixed Liquor Flow, Average MGD 0.68
16. Mixed Liquor Detention Time, Average Hours 12
17. BOD Removed, Percent 92
18. BOD Removed, lb./day 442
19. Oxygen Transfer Efficiency, Percent 6
20. Air Required, CFM 1,050

Final Tanks

21. Number of Tanks 2
22. Diameter, Feet 27
23. Total Surface Area, sq. ft. 1,146
24. Surface Settling Rate, Average Flow, gpd/sq. ft. 297

VILLAGE OF OAKFIELD
WASTEWATER TREATMENT FACILITIES

DESIGN CRITERIA
(Continued)

Final Tanks (Continued)

25.	Surface Settling Rate, Maximum Flow, gpd/sq. ft.	960
26.	Depth of Tanks (SWD), Feet	13.90
27.	Total Volume of Tanks, cu. ft.	15,930
28.	Detention Time at Average Flow, Hours	8.4
29.	Detention Time at Maximum Flow, Hours	2.6

Effluent Filters

30.	Number of Units	6
31.	Surface Area Per Unit, sq. ft.	100
32.	Total Surface Area, sq. ft.	600
33.	Peak Flow Filtration Rate, gpm/sq. ft. (with 4 units operating)	1.9
34.	Filtration Rate, gpm/sq. ft. (with 4 units operating)	0.6
35.	Backwash Rate, gpm/sq. ft.	12
36.	Total 10-Minute Wash, Gal.	12,000

Disinfection Facilities

37.	Number of Tanks	2
38.	Total Surface Area, sq. ft.	533
39.	Depth of Tanks, Feet	8
40.	Total Volume of Tanks, cu. ft.	4,264
41.	Detention Time at Maximum Flow, Minutes	42
42.	Number of Chlorinators	2
43.	Capacity of Chlorinators, lb./day	0-100

Post-Aeration Facilities

44.	Number of Tanks	2
45.	Total Surface Area, sq. ft.	533
46.	Depth of Tanks	8
47.	Total Volume of Tanks, cu. ft.	4,264
48.	Detention Time at Maximum Flow, Minutes	42
49.	Air Required, CFM	15

EXHIBIT D

(Page 2 of 2)

ENGINEERING REPORT
FOR THE
VILLAGE OF OAKFIELD
WASTEWATER TREATMENT PLANT
AERATION SYSTEM IMPROVEMENTS

OCTOBER 2, 1989

TABLE OF CONTENTS
OAKFIELD WWTP ENGINEERING REPORT

Introduction

- Purpose and Scope
- Background

Discussion of Proposed Modifications

- Proposed Modifications
- Cost Estimate and Analysis

Recommendations

1. Introduction

Purpose and Scope

The purpose of this Engineering Report is to outline the proposed aeration improvements to the Village of Oakfield Wastewater Treatment Plant.

The proposed aeration improvements consist of replacing the existing coarse bubble diffusers in the aeration tanks, sludge storage tanks, post aeration and backwash holding tanks to fine bubble aeration. Also, proposed is to replace one existing 100 hp blower with a new 50 hp centrifugal blower.

The impact of these improvements will be increased aeration efficiency and power cost savings. The operation and maintenance budget at the Wastewater Treatment Plant will be decreased approximately \$22,233 per year. This will result in a net savings of approximately 15% per year per home owner.

Background

The Village of Oakfield Wastewater Treatment Facility is a Packaged Activated Sludge Treatment Plant located in the Village of Oakfield, off State Route 262 in Genesee County. Refer to Figure #1. The Plant has an average daily flow of approximately 0.25 million gallons per day (MGD), with wet weather flows up to 2.0 mgd during peak conditions. Currently a Wet Weather Treatment System is being constructed which will treat raw sewage in excess of 0.500 mgd. The Wet Weather Treatment System is being funded by a Housing and Urban Development (HUD) Small Cities Grant.

The Village proposes to utilize leftover funds from the \$389,000 HUD Grant to finance the aeration system improvements.

2. Discussion of Proposed Modifications

Proposed modifications

Currently the Wastewater Treatment Plant utilizes coarse bubble aeration and two (2) 100 hp. blowers to meet the aeration requirements in the aeration tanks, sludge storage tanks, post aeration and backwash holding tanks. The technology in aeration equipment has improved substantially over the last several years since the plant was constructed in 1978.

The latest developments in the aeration industry include utilization of fine bubble diffusion equipment which tremendously increases the aeration efficiency, provides better dispersion of air and mixing, and decreases the energy required from the blowers. The decreased demand for air, warrants replacing the existing 100 hp blower with a new efficient 40 hp centrifugal blower.

The aeration requirements for the plant are provided as follows:

<u>Description</u>	<u>Volume (Ft³)</u>	<u>Air reqt. (SCFM)</u>
Aeration tanks (total both plants)	45,454	430
Post Aeration tanks (Total both plants)	4,264	30
Sludge Storage Tanks (1 plant - intermittent)	6,800	170
Backwash Holding Tanks (2 plants - intermittent)	8,400	210
TOTALS with sludge storage or backwash holding	64,918	670 SCFM

Detailed calculations of air requirements are provided as follows:

Aeration Tanks

The following data and assumptions were used to calculate the aeration tank requirements:

Number of tanks:	Two (2)
Volume per tank:	22,727 ft ³
#BOD/day total:	300
#NH ₃ -N/day total:	70
#O ₂ /#BOD:	1.5
#O ₂ /#NH ₃ -N:	4.6
Alpha:	0.50
Beta:	0.95
Theta:	1.024
Ambient Pressure (PSIA):	14.46
Water Temp. (°C):	20

$$\#O_2/\text{day} = (300 \#BOD/\text{Day}) (1.5 \#O_2/\#BOD) + (70 \#NH_3N/\text{day}) (4.6 \#O_2/\#NH_3-N)$$

$$\#O_2/\text{day} = 450 \#O_2/\text{day} + 322 \#O_2/\text{day}$$

$$\#O_2/\text{day} = 772 \#O_2/\text{day}$$

70
4.6
4.2
2.8
322
400
41.5
240
720

8.34
1.5
41.70
300 = 4.17
4.17 3000

$$\text{ADR/SOR} = \frac{(\text{THETA})^{T-20} (\text{ALPHA}) [(\text{BETA}) (C^* \text{SAT}_{20}) (C_{\text{SURF}_T} / 9.07) (P_{\text{SITE}} / P_{\text{SC}}) - (D.O.)]}{(C^* \text{SAT}_{20})}$$

$$(C^* \text{SAT}_{20})$$

$$D.O = 3.0 \text{ MG/L}$$

$$\text{ADR/SOR} = 0.295$$

$$\begin{aligned} \text{O}_2 \text{ required} &= 772 / 0.295 = 2616 \text{ \#/day} \\ &= 2650 \text{ \#/day} \end{aligned}$$

@ 24.56% transfer efficiency

$$\begin{aligned} \text{Cu. ft. air required/day} &= 2650 / 0.075 \times 0.232 \times 0.2456 \\ &= 620109 \text{ ft}^3/\text{day} \\ &= 430.63 \text{ SCFM} \end{aligned}$$

Sludge Storage Tanks

$$\frac{25 \text{ SCFM}}{1000 \text{ ft}^3} \times 6800 \text{ ft}^3 = 170 \text{ SCFM}$$

Note: Sludge storage tanks operate approximately 1 hr/week per tank and assumption was made of an average of 0.4 hr/day based upon a 5 day week.

Post Aeration Tanks

$$\frac{4 \text{ SCFM}}{1000 \text{ ft}^3} \times 4264 \text{ ft}^3 = 17 \text{ SCFM}$$

Backwash Holding Tanks

$$\frac{25 \text{ SCFM}}{1000 \text{ ft}^3} \times 8400 \text{ ft}^2 = 210 \text{ SCFM}$$

Blower Sizing

Hoffman Air and Filtration Model #4208A
 8 Stage 59 hp Blower. Draws 33 BHP running
 460 SCFM @ 7.5 psig. Draws 41 BHP running
 670 SCFM @ 7.5 psig. BHP draw based on site conditions at the
 Oakfield WWTP

We have reviewed a proposal from sanitaire water pollution control concerning the fine bubble diffusion equipment and have attached a brochure explaining fine bubble diffusion in greater detail.

Over a period of time, the ceramic diffusers tend to loose their efficiency due to partial plugging. Due to the original design of the plant, the tanks would have to be drained and diffusers would have to be cleaned manually. A automatic gas cleaning system can be installed to automatically clean the diffusers periodically, without disrupting the operation of the plant. The automatic gas cleaning system will save valuable operator time and keep the plant in operation at all times and maintain high aeration equipment efficiency

The proposed layout of fine bubble aeration equipment is shown on Figure #2.

Cost Estimate and Analysis

The estimated costs for the improvements described above are:

Equipment cost for new diffusers, blower, etc.	\$40,000
Gas cleaning equipment	19,600
Installation cost of equipment	<u>35,000</u>
	94,600

The estimated cost savings projections are provided below:

	<u>BHP</u>	<u>KW/HP</u>		<u>HR/DAY</u>		<u>DAY/YR</u>	<u>\$/KWH</u>	<u>\$/YR</u>
Aeration and Post Aeration	33 X	0.746	X	24	X	365	X 0.07	= \$15,096

Sludge Storage	8 X	0.746	X	0.4	X	365	X 0.07 =	\$61
----------------	-----	-------	---	-----	---	-----	----------	------

Backwash Holding	8 X	0.746	X	8	X	365	X 0.07 =	<u>\$ 1,220</u>
------------------	-----	-------	---	---	---	-----	----------	-----------------

Estimated yearly power cost for aeration after upgrade								\$16,377
--	--	--	--	--	--	--	--	----------

Assume 75% of present power cost is for aeration

$$\$51,480 \times 0.75 = \$38,610$$

Estimated power savings/year with aeration upgrade

$$\$38,610 - \$16,377 = \$22,233$$

Estimated payback of new aeration system

$$\$94,600 / \$22,233 = 4.2 \text{ years}$$

Recommendations

Based upon the site conditions at the Oakfield WWTP and the high operating expenses incurred with the aeration blowers, we recommend that the Village replace the two existing 100 hp blowers with two new 50 hp blowers and replace the existing coarse bubble diffusion equipment with a new Fine Bubble Aeration System.

The Village Residents will realize lower user charges due to the decrease of operation and maintenance costs from making these improvements. The improvements proposed will increase the efficiency of the plant and the plant will continue to meet the discharge limitations set forth in the SPDES Permit.

Appendix F

Village of Oakfield WWTF Sludge Drying Bed Storage Calculations

**Village of Oakfield
Wastewater Treatment Facility
Sludge Drying Bed Storage
September 11, 2017**

Based on 2015-2016 Reed Bed Sludge Application:
Approximately 360,000 gallons annually at 1%-2% Solids

Estimate 2-week drying time
52 weeks / 1 pour every 2-weeks = 26 pours annually

360,000 gallons / 26 pours = 13,850 gallons per pour

13,850 gallons x (1 CF/7.48 gallons) = 1,851 CF

Drying Bed size at 16" depth (Based on Village of Corfu practices with use of polymers.
Application of 16" of sludge immediately reduces to 4")

1,851 CF / (16"/12") x 2 = 2,777 SF
say **3,000 SF Drying Bed**

Appendix G

NYSDEC Oak Orchard TMDL Analysis 081715 DRAFT Excerpts

2 Assessment of Phosphorus Sources

2.1 Point Sources

Point sources of pollution, as defined by the federal Clean Water Act, include any discrete conveyance that discharges pollutants to a waterbody, such as pipes or ditches discharging wastewater from a sewage treatment plant or industrial facility. Point sources of pollution are regulated by the NYSDEC State Pollutant Discharge Elimination System (SPDES) permit program.

There are seven point sources of discharge in the Oak Orchard Creek watershed. Five are wastewater point sources and are permitted under the SPDES permit program: Elba Wastewater Treatment Plant (WWTP), US Gypsum Company, Oakfield WWTP, Bonduelle USA, and Medina WWTP. In addition, the Erie Canal, a cross-state navigation canal, runs east-west across the Oak Orchard watershed and spills water to the Oak Orchard Creek watershed at two locations to support hydroelectric operations at the Village of Medina into Oak Orchard Creek and near the Village of Albion into Otter Creek.

Facility monitoring records for the five SPDES permitted point sources were acquired from NYSDEC for estimating point source phosphorus loads. Average annual effluent flows volumes from permitted facilities are listed in Table 2. Discharge monitoring records do not contain phosphorus samples for Elba WWTP, Oakfield WWTP, Bonduelle USA, and US Gypsum (outfalls 2, 3, and 5). Average phosphorus concentrations were estimated by NYSDEC as:

- Elba WWTP = 4.2 mg/L
- US Gypsum Outfalls 2, 3, and 5 = 0.01 mg/L
- Oakfield WWTP = 2.2 mg/L
- Bonduelle USA = 4.0 mg/L

For the two Erie Canal discharges, annual discharge volumes were estimated using flow rates of 225 cubic feet per second for the Oak Orchard Creek discharge (based on communication with Brookfield Renewable, the operator of the downstream hydroelectric plant) and 20 cubic feet per second for the Otter Creek discharge (Zollweg, et al., 2005). Both discharges were assumed to occur during the Erie Canal open season, May 1 through November 15, with zero discharge from November 16 through April 30. The average phosphorus concentration for water spilled from the Erie Canal to Oak Orchard Creek and Otter Creek was estimated as 55.9 µg/L (Dressel, 2014).

Table 2. Summary of point source phosphorus loads in the Oak Orchard Creek watershed.

Facility Name	SPDES Permit No.	Effluent Flow (million gallons/year)	Effluent TP Conc. (µg/L)	Effluent TP Load (kg/year)
Elba WWTP	NY0020907	29	4,200	464
US Gypsum Co.	NY0001562	3,113	Varies by Outfall	851
Outfall 1		1,955	109	807
Outfall 2		34	10	1.3
Outfall 3		9	10	0.4
Outfall 5		1,115	10	42
Oakfield WWTP	NY0023639	54	2,200	450
Bonduelle USA	NY0063681	69	4,000	1,050
Medina WWTP	NY0021873	663	888	2,228
Erie Canal to Oak Orchard Ck.	-	28,793	55.9	6,093
Erie Canal to Otter Ck.	-	2,559	55.9	542
TOTAL				11,678

Appendix H

Edwards Vacuum Employment Ramp-up



Edwards Vacuum Employment Ramp-Up Design Average Flows

Source	Type of Use	Unit	Unit Flow (gpd)	Employees Hired per Quarter	Cumulative Total # of Employees	Cumulative Design Average Daily Flow (gpd)	Pumping Frequency (days) ⁴
STAMP							
<u>Edwards Vacuum</u>							
2025							
Q1	Factory, no showers, no cafeteria	Per employee/shift	15	8	8	120	58
Q2	Factory, no showers, no cafeteria	Per employee/shift	15	11	19	285	25
Q3	Factory, no showers, no cafeteria	Per employee/shift	15	15	34	510	14
Q4	Factory, no showers, no cafeteria	Per employee/shift	15	58	92	1,380	5
Total for 2025 =				92			
2026							
Q1	Factory, no showers, cafeteria provided	Per employee/shift	20	30	122	2,440	3
Q2	Factory, no showers, cafeteria provided	Per employee/shift	20	12	134	2,680	3
Q3	Factory, no showers, cafeteria provided	Per employee/shift	20	5	139	2,780	3
Q4	Factory, no showers, cafeteria provided	Per employee/shift	20	15	154	3,080	2
Total for 2026 =				62			
Total through Q4 2026 =				154	154	3,080	2

Notes:

1 Plug Power initial flows were expected to be 500 gpd, 38 employees working 3 shifts.

2

Hold and Haul total storage volume is 16,000 gpd. Bi-weekly pumping (7,000 gal capacity), two-week over run (4 weeks total, 14,000 gallon capacity, 4 days freeboard (16,000 gallons) 3 Hold and Haul tank alarms set at 14 days (7,000 gal.), 21 days (10,500 gal.) and 28 days (14,000 gal.)

4 Pumping frequency based on average daily flow filling rate. And a maximum of 7,000 gallons of storage before pumping is required.

5 It is anticipated that the force main to the Village of Oakfield WWTF will be operational in Q3 2026.

Appendix I

Phase 1 Force Main Design Calculations, Wet Well Calcs, and System Curves

**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
Edwards Force Main & Pump Station Wet Well Sizing
January 2024**

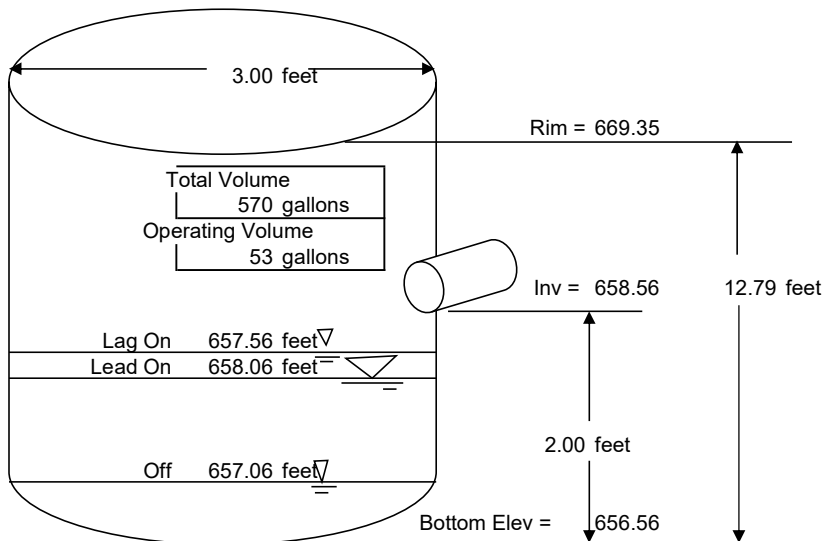
Wet Well Information		Flow Information	
Diameter	3.00 feet	Daily Flow	3,080 gpd
Top Elevation	669.35 feet	Average Flow	2.1 gpm
Invert Elevation	658.56 feet	Peak Flow	8.6 gpm
Bottom Elevation	656.56 feet	Required Wet Well	32 gallons
Total Wet Well Volume	570 gallons		
Future Conditions		Present Conditions	
Pump "Off"	657.06 feet	Pump "Off"	657.06 feet
Lead Pump "On"	658.06 feet	Lead Pump "On"	658.06 feet
Lag Pump "On"	657.56 feet	Lag Pump "On"	657.56 feet
Operating Volume	53 gallons	Operating Volume	53 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	672.15 feet	Force Main Length	1,100 feet
Rim Elevation	674.15 feet	PVC Pipe DIPS	
		2-inch has ID of	1.917 inches
Elevation of Forcemain		Capacity 2-inch	165 gallons
High Elevation	672.15 feet	2" Minimum Pumping Rate	18 gpm at
Low Elevation	657.06 feet	2" Minimum Pumping Rate	27 gpm at

2-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	16.0	1,100	0.0	16.0
5	16.0	1,100	1.3	17.3
10	16.0	1,100	4.8	20.8
15	16.0	1,100	10.3	26.3
20	16.0	1,100	17.5	33.5
25	16.0	1,100	26.4	42.4
30	16.0	1,100	37.0	53.0
45	16.0	1,100	78.4	94.4
60	16.0	1,100	133.6	149.6
75	16.0	1,100	202.0	218.0
90	16.0	1,100	283.1	299.1
105	16.0	1,100	376.6	392.6
120	16.0	1,100	482.3	498.3
2.0 ft/sec				
3.0 ft/sec				

Time to fill wet well 24.71 min
Time to empty wet well -24.71 min

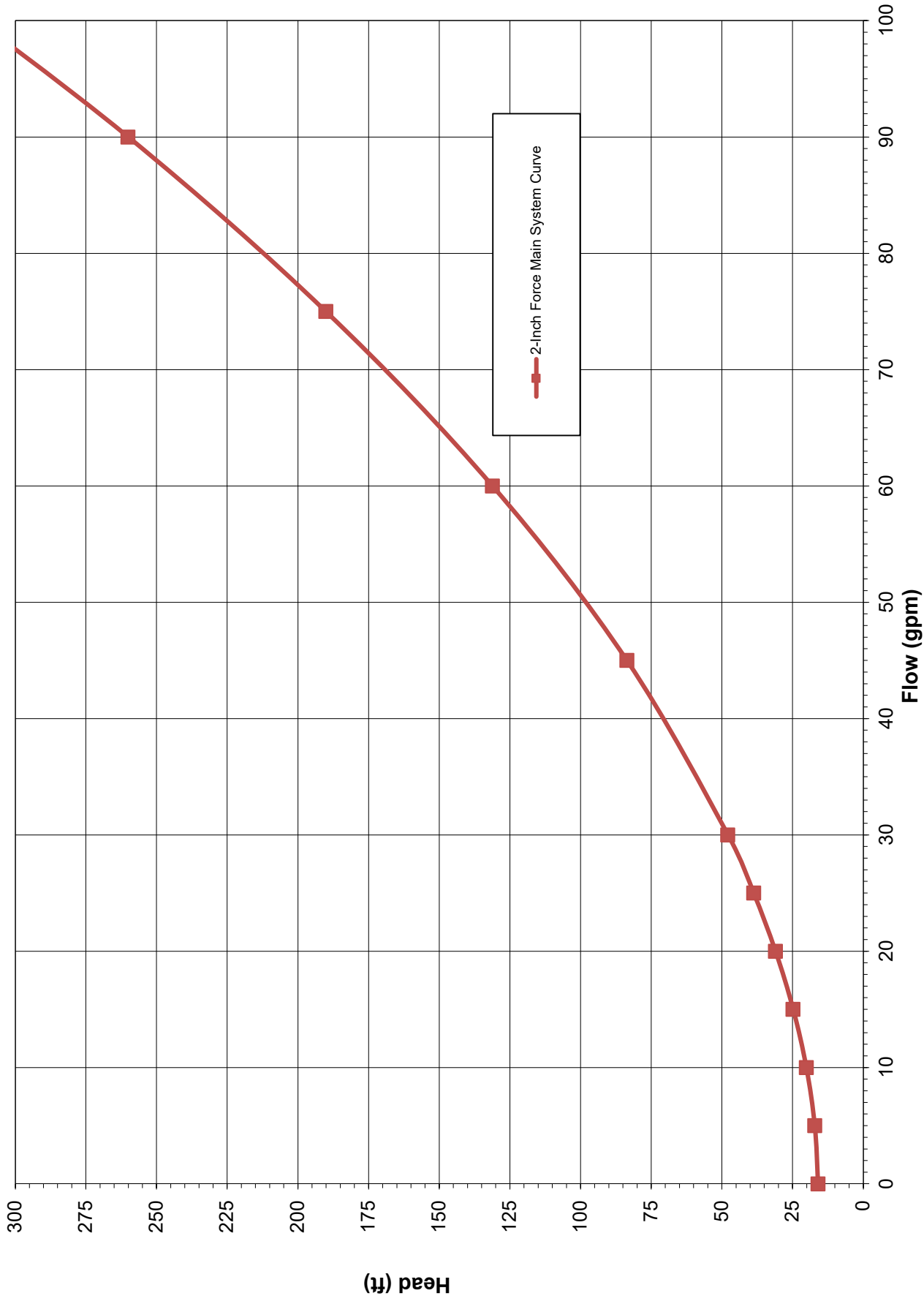
Force Main Retention Time

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	165	0.02 days



Proposed Wet Well Conditions

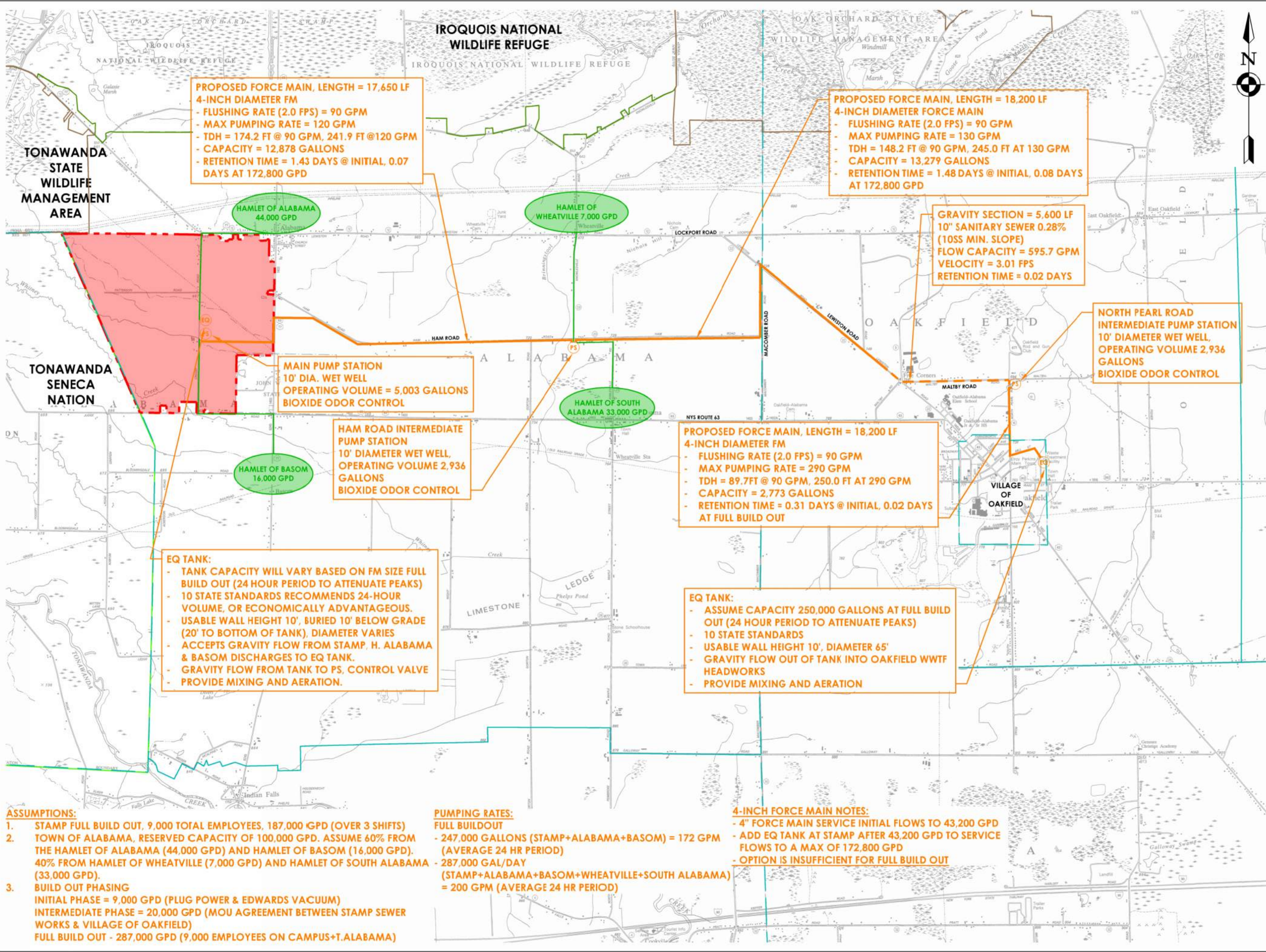
***STAMP Onsite Force Main to the
Hold and Haul Tank System Curve***



Appendix J

Phase 2 Force Main Sizing Analysis

Sheet size: 11x17
Drawing Name: J:\PROJECTS\GCEDC\STAMP Oakfield Force Main\DWG\Civil\Figures\Oakfield Force Main Sizing Options.dwg
Date last accessed: 1/29/2025 10:49 AM
Date last plotted: 1/29/2025 10:51 AM
Plotted By: Zach Anderson



CPL | Architecture Engineering Planning

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CPLteam.com

NY ENGINEERING FIRM CERTIFICATE #018330

PROJECT INFORMATION

Project Number

R15.15981.00

Client Name

**GENESEE COUNTY ECONOMIC
DEVELOPMENT CENTER**

Project Name

**WNY STAMP - OAKFIELD
FORCE MAIN**

Project Address

GENESEE COUNTY, NY

SHEET INFORMATION

Issued

10/4/2024

Scale

AS NOTED

Drawn By

ZLA

Checked By

ARK

Drawing Title

**VILLAGE OF OAKFIELD
DISCHARGE FORCE
MAIN SIZING - OPTION 1
4-INCH FORCE MAIN**

Drawing Number

FIG.-01

**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
Main Pump Station Wet Well Sizing
January 2025**

Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	247,000 gpd
Top Elevation	669.00 feet	Average Flow	171.5 gpm
Invert Elevation	658.64 feet	Peak Flow	686.1 gpm
Bottom Elevation	646.12 feet	Required Wet Well	2,573 gallons
Total Wet Well Volume	6,177 gallons		
Future Conditions		Present Conditions	
Pump "Off"	647.12 feet	Pump "Off"	647.12 feet
Lead Pump "On"	655.64 feet	Lead Pump "On"	655.64 feet
Lag Pump "On"	656.64 feet	Lag Pump "On"	656.64 feet
Operating Volume	5,003 gallons	Operating Volume	5,003 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	718.00 feet	Force Main Length	17,650 feet
Rim Elevation	723.00 feet	PVC Pipe DIPS	
		4-inch has ID of	4.230 inches
Elevation of Forcemain		Capacity 4-inch	12,878 gallons
High Elevation	725.00 feet		
Low Elevation	644.64 feet	4" Minimum Pumping Rate	87 gpm at
		4" Minimum Pumping Rate	130 gpm at

4-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	78.0	17,650	0.0	78.0
30	78.0	17,650	12.6	90.6
60	78.0	17,650	45.4	123.4
90	78.0	17,650	96.2	174.2
95	78.0	17,650	106.3	184.3
100	78.0	17,650	116.9	194.9
105	78.0	17,650	128.0	206.0
110	78.0	17,650	139.5	217.5
115	78.0	17,650	151.5	229.5
120	78.0	17,650	163.9	241.9
125	78.0	17,650	176.8	254.8
130	78.0	17,650	190.1	268.1

2.0 ft/sec

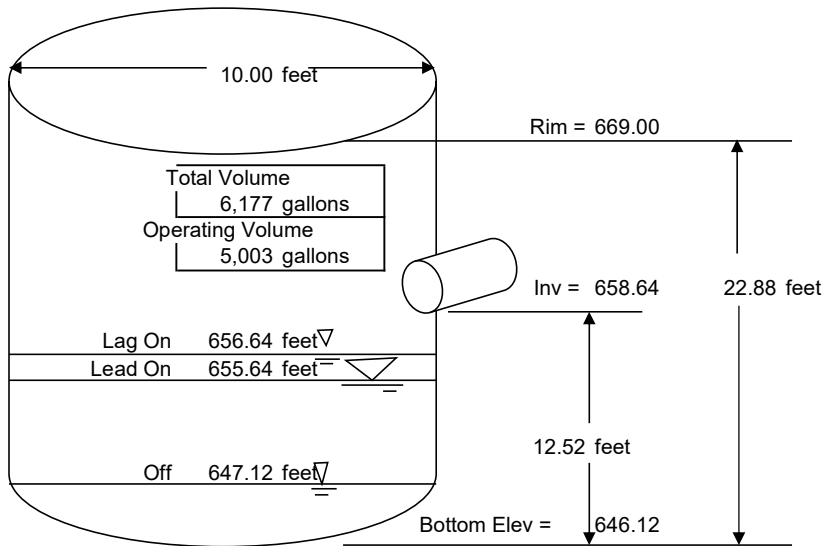
3.0 ft/sec

Force Main Retention Time

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	12,878	1.43 days
MOU	20,000	12,878	0.64 days
Max Flow	172,800	12,878	0.07 days
Full Build	247,000	12,878	0.05 days

Station Piping	
23 feet of	6 inch piping
0 feet of	4 inch piping

Time to fill wet well 29.17 min
Time to empty wet well -29.17 min



Proposed Wet Well Conditions

**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
Ham Road Intermediate Pump Station Wet Well Sizing
January 2025**

Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	287,000 gpd
Top Elevation	724.00 feet	Average Flow	199.3 gpm
Invert Elevation	716.84 feet	Peak Flow	797.2 gpm
Bottom Elevation	708.34 feet	Required Wet Well	2,990 gallons
Total Operating Volume	3,817 gallons		
Future Conditions		Present Conditions	
Pump "Off"	709.34 feet	Pump "Off"	709.34 feet
Lead Pump "On"	714.34 feet	Lead Pump "On"	714.34 feet
Lag Pump "On"	715.34 feet	Lag Pump "On"	715.34 feet
Operating Volume	2,936 gallons	Operating Volume	2,936 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	756.00 feet	Force Main Length	18,200 feet
Rim Elevation	762.00 feet	PVC Pipe DIPS	
		4-inch has ID of	4.230 inches
Elevation of Forcemain		Capacity 4-inch	13,279 gallons
High Elevation	758.00 feet		
Low Elevation	709.34 feet	4" Minimum Pumping Rate	87 gpm at
		4" Minimum Pumping Rate	130 gpm at

4-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	49.0	18,200	0.0	49.0
30	49.0	18,200	13.0	62.0
60	49.0	18,200	46.8	95.8
90	49.0	18,200	99.2	148.2
95	49.0	18,200	109.6	158.6
100	49.0	18,200	120.6	169.6
105	49.0	18,200	132.0	181.0
110	49.0	18,200	143.8	192.8
115	49.0	18,200	156.2	205.2
120	49.0	18,200	169.0	218.0
125	49.0	18,200	182.3	231.3
130	49.0	18,200	196.0	245.0

2.0 ft/sec

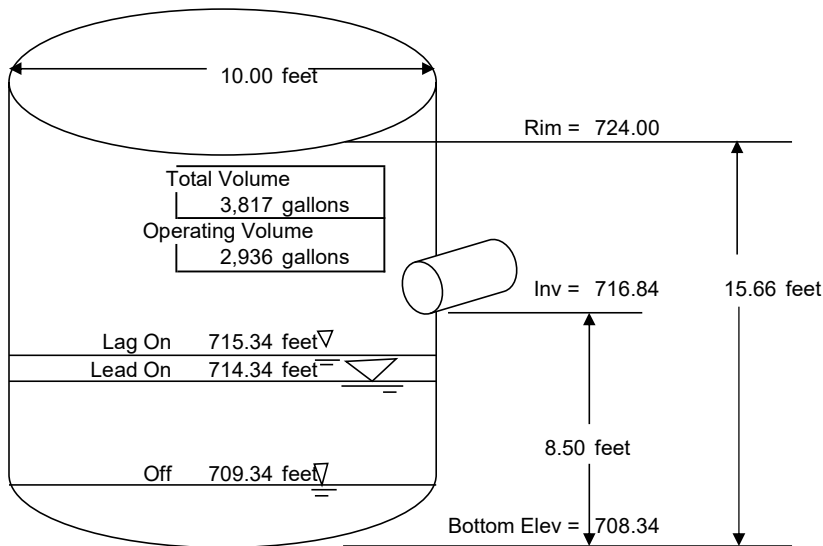
3.0 ft/sec

Force Main Retention Time

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	13,279	1.48 days
MOU	20,000	13,279	0.66 days
Max Flow	172,800	13,279	0.08 days
Full Build	287,000	13,279	0.05 days

Station Piping	
16 feet of	6 inch piping
0 feet of	4 inch piping

Time to fill wet well 14.73 min
Time to empty wet well -14.73 min



Proposed Wet Well Conditions

**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
North Pearl Intermediate Pump Station Wet Well Sizing
January 2025**

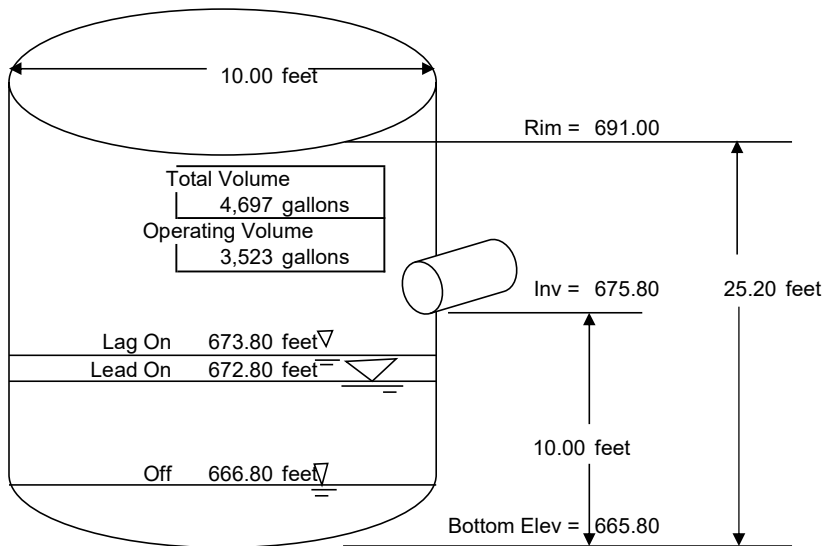
Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	287,000 gpd
Top Elevation	691.00 feet	Average Flow	199.3 gpm
Invert Elevation	675.80 feet	Peak Flow	797.2 gpm
Bottom Elevation	665.80 feet	Required Wet Well	2,990 gallons
Total Operating Volume	4,697 gallons		
Future Conditions		Present Conditions	
Pump "Off"	666.80 feet	Pump "Off"	666.80 feet
Lead Pump "On"	672.80 feet	Lead Pump "On"	672.80 feet
Lag Pump "On"	673.80 feet	Lag Pump "On"	673.80 feet
Operating Volume	3,523 gallons	Operating Volume	3,523 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	713.00 feet	Force Main Length	3,800 feet
Rim Elevation	718.00 feet	PVC Pipe DIPS	
		4-inch has ID of	4.230 inches
Elevation of Forcemain		Capacity 4-inch	2,773 gallons
High Elevation	735.00 feet		
Low Elevation	666.80 feet	4" Minimum Pumping Rate	87 gpm at
		4" Minimum Pumping Rate	130 gpm at

4-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	69.0	3,800	0.0	69.0
30	69.0	3,800	2.7	71.7
60	69.0	3,800	9.8	78.8
90	69.0	3,800	20.7	89.7
120	69.0	3,800	35.3	104.3
150	69.0	3,800	53.4	122.4
180	69.0	3,800	74.8	143.8
210	69.0	3,800	99.6	168.6
240	69.0	3,800	127.5	196.5
270	69.0	3,800	158.6	227.6
290	69.0	3,800	181.0	250.0
320	69.0	3,800	217.2	286.2

Time to fill wet well 17.68 min
Time to empty wet well -17.68 min

Force Main Retention Time

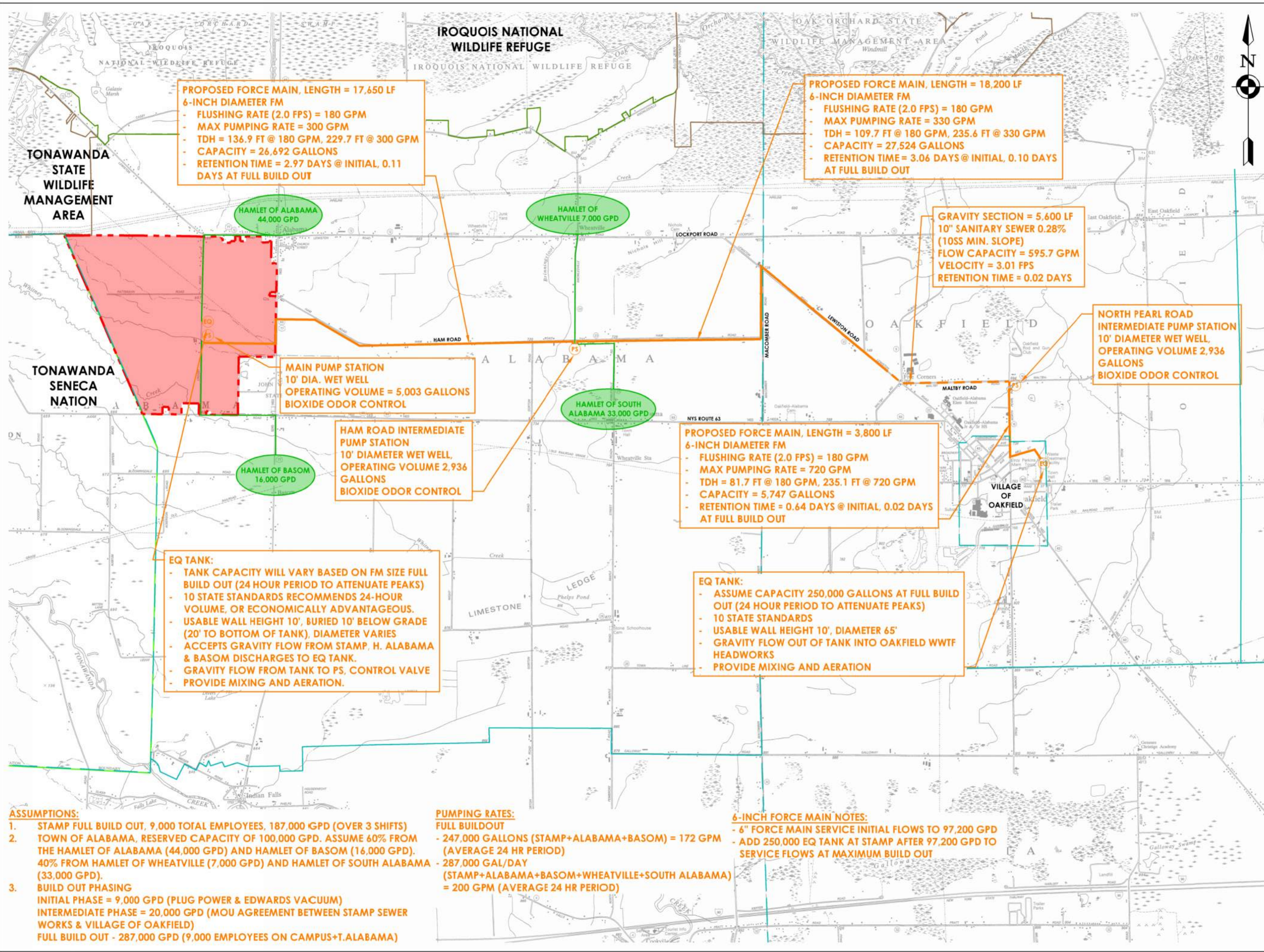
Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	2,773	0.31 days
MOU	20,000	2,773	0.14 days
Max Flow	172,800	2,773	0.02 days
Full Build	287,000	2,773	0.01 days



Station Piping	
25 feet of	6 inch piping
0 feet of	4 inch piping

Proposed Wet Well Conditions

Sheet size: 11x17
Drawing Name: J:\PROJECTS\GCEDC\STAMP Oakfield Force Main\DWG\Civil\Figures Oakfield Force Main Sizing Options.dwg
Date last accessed: 1/29/2025 10:49 AM
Date last plotted: 1/29/2025 10:51 AM
Plotted By: Zach Anderson



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CPLteam.com

NY ENGINEERING FIRM CERTIFICATE #018330

PROJECT INFORMATION

Project Number

R15.15981.00

Client Name

**GENESEE COUNTY ECONOMIC
DEVELOPMENT CENTER**

Project Name

**WNY STAMP - OAKFIELD
FORCE MAIN**

Project Address

GENESEE COUNTY, NY

SHEET INFORMATION

Issued

10/4/2024

Drawn By

ZLA

Drawing Title

**VILLAGE OF OAKFIELD
DISCHARGE FORCE
MAIN SIZING - OPTION 2
6-INCH FORCE MAIN**

Scale

AS NOTED

Checked By

ARK

Drawing Number

FIG.-02

**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
Main Pump Station Wet Well Sizing
January 2025**

Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	247,000 gpd
Top Elevation	669.00 feet	Average Flow	171.5 gpm
Invert Elevation	658.64 feet	Peak Flow	686.1 gpm
Bottom Elevation	646.12 feet	Required Wet Well	2,573 gallons
Total Wet Well Volume	6,177 gallons		
Future Conditions		Present Conditions	
Pump "Off"	647.12 feet	Pump "Off"	647.12 feet
Lead Pump "On"	655.64 feet	Lead Pump "On"	655.64 feet
Lag Pump "On"	656.64 feet	Lag Pump "On"	656.64 feet
Operating Volume	5,003 gallons	Operating Volume	5,003 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	718.00 feet	Force Main Length	17,650 feet
Rim Elevation	723.00 feet	PVC Pipe DIPS	6-inch has ID of 6.090 inches
Elevation of Forcemain		Capacity 6-inch	26,692 gallons
High Elevation	725.00 feet		
Low Elevation	647.12 feet	6" Minimum Pumping Rate	180 gpm at
		6" Minimum Pumping Rate	270 gpm at

6-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	78.0	17,650	0.0	78.0
30	78.0	17,650	2.1	80.1
60	78.0	17,650	7.7	85.7
90	78.0	17,650	16.3	94.3
120	78.0	17,650	27.8	105.8
150	78.0	17,650	42.0	120.0
180	78.0	17,650	58.9	136.9
210	78.0	17,650	78.4	156.4
240	78.0	17,650	100.4	178.4
270	78.0	17,650	124.8	202.8
300	78.0	17,650	151.7	229.7
330	78.0	17,650	181.0	259.0

2.0 ft/sec

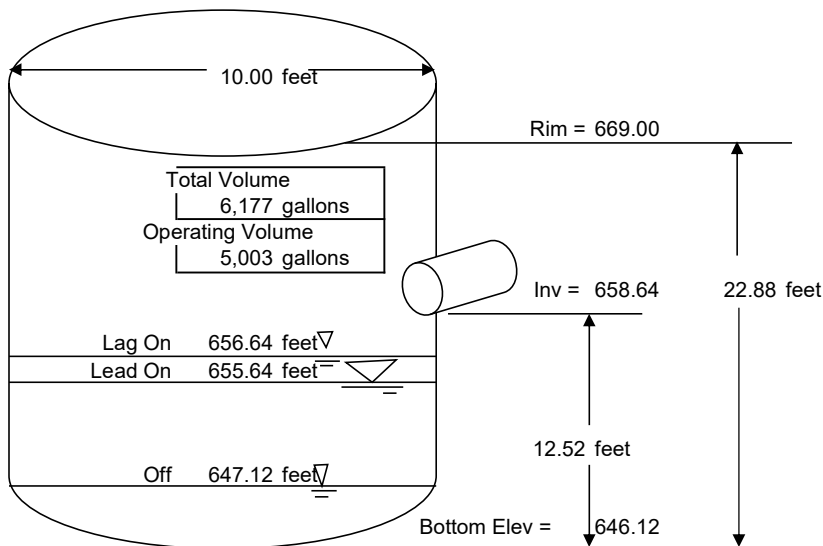
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Force Main Retention Time

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	26,692	2.97 days
MOU	20,000	26,692	1.33 days
Full Build	247,000	26,692	0.11 days

Station Piping	
23 feet of	6 inch piping
0 feet of	4 inch piping

Time to fill wet well 29.17 min
Time to empty wet well -29.17 min



Proposed Wet Well Conditions

**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
Ham Road Intermediate Pump Station Wet Well Sizing
January 2025**

Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	287,000 gpd
Top Elevation	724.00 feet	Average Flow	199.3 gpm
Invert Elevation	716.84 feet	Peak Flow	797.2 gpm
Bottom Elevation	708.34 feet	Required Wet Well	2,990 gallons
Total Operating Volume	3,817 gallons		
Future Conditions		Present Conditions	
Pump "Off"	709.34 feet	Pump "Off"	709.34 feet
Lead Pump "On"	714.34 feet	Lead Pump "On"	714.34 feet
Lag Pump "On"	715.34 feet	Lag Pump "On"	715.34 feet
Operating Volume	2,936 gallons	Operating Volume	2,936 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	756.00 feet	Force Main Length	18,200 feet
Rim Elevation	762.00 feet	PVC Pipe DIPS	
		6-inch has ID of	6.090 inches
Elevation of Forcemain		Capacity 6-inch	27,524 gallons
High Elevation	758.00 feet		
Low Elevation	709.34 feet	6" Minimum Pumping Rate	180 gpm at
		6" Minimum Pumping Rate	270 gpm at

6-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	49.0	18,200	0.0	49.0
120	49.0	18,200	28.7	77.7
140	49.0	18,200	38.1	87.1
180	49.0	18,200	60.7	109.7
210	49.0	18,200	80.8	129.8
240	49.0	18,200	103.5	152.5
270	49.0	18,200	128.7	177.7
300	49.0	18,200	156.4	205.4
330	49.0	18,200	186.6	235.6
340	49.0	18,200	197.2	246.2
390	49.0	18,200	254.2	303.2
420	49.0	18,200	291.6	340.6

2.0 ft/sec

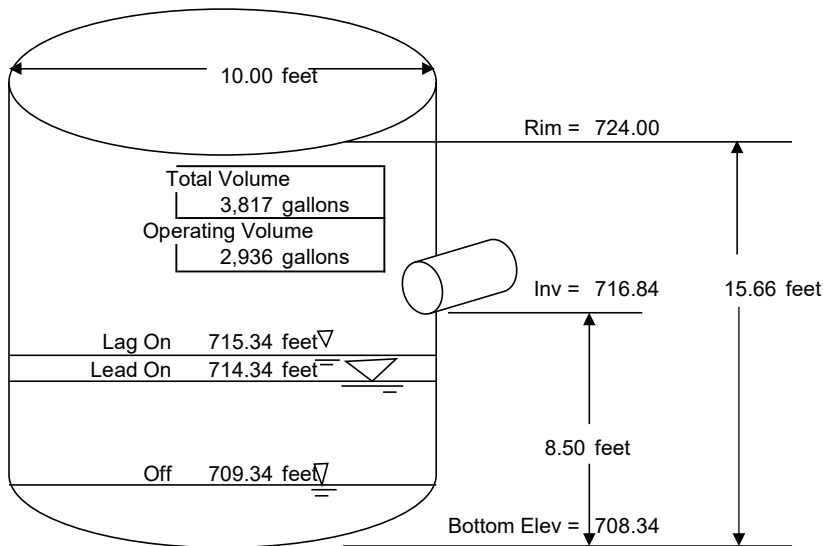
3.0 ft/sec

Force Main Retention Time

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	27,524	3.06 days
MOU	20,000	27,524	1.38 days
Full Build	287,000	27,524	0.10 days

Station Piping	
16 feet of	6 inch piping
0 feet of	4 inch piping

Time to fill wet well 14.73 min
Time to empty wet well -14.73 min



Proposed Wet Well Conditions

**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
North Pearl Intermediate Pump Station Wet Well Sizing
January 2025**

Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	287,000 gpd
Top Elevation	691.00 feet	Average Flow	199.3 gpm
Invert Elevation	675.80 feet	Peak Flow	797.2 gpm
Bottom Elevation	665.80 feet	Required Wet Well	2,990 gallons
Total Operating Volume	4,697 gallons		
Future Conditions		Present Conditions	
Pump "Off"	666.80 feet	Pump "Off"	666.80 feet
Lead Pump "On"	672.80 feet	Lead Pump "On"	672.80 feet
Lag Pump "On"	673.80 feet	Lag Pump "On"	673.80 feet
Operating Volume	3,523 gallons	Operating Volume	3,523 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	713.00 feet	Force Main Length	3,800 feet
Rim Elevation	718.00 feet	PVC Pipe DIPS	
		6-inch has ID of	6.090 inches
Elevation of Forcemain		Capacity 6-inch	5,747 gallons
High Elevation	735.00 feet		
Low Elevation	666.80 feet	6" Minimum Pumping Rate	180 gpm at
		6" Minimum Pumping Rate	270 gpm at

6-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	69.0	3,800	0.0	69.0
120	69.0	3,800	6.0	75.0
150	69.0	3,800	9.1	78.1
180	69.0	3,800	12.7	81.7
210	69.0	3,800	17.0	86.0
240	69.0	3,800	21.7	90.7
270	69.0	3,800	27.0	96.0
300	69.0	3,800	32.8	101.8
330	69.0	3,800	39.2	108.2
360	69.0	3,800	46.0	115.0
390	69.0	3,800	53.4	122.4
420	69.0	3,800	61.2	130.2
720	69.0	3,800	166.1	235.1

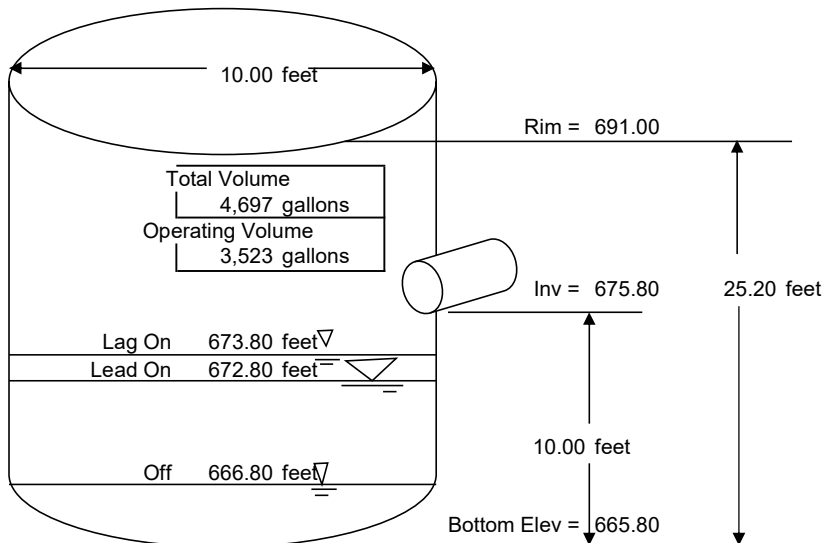
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3.0 ft/sec

Force Main Retention Time

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	5,747	0.64 days
MOU	20,000	5,747	0.29 days
Full Build	287,000	5,747	0.02 days

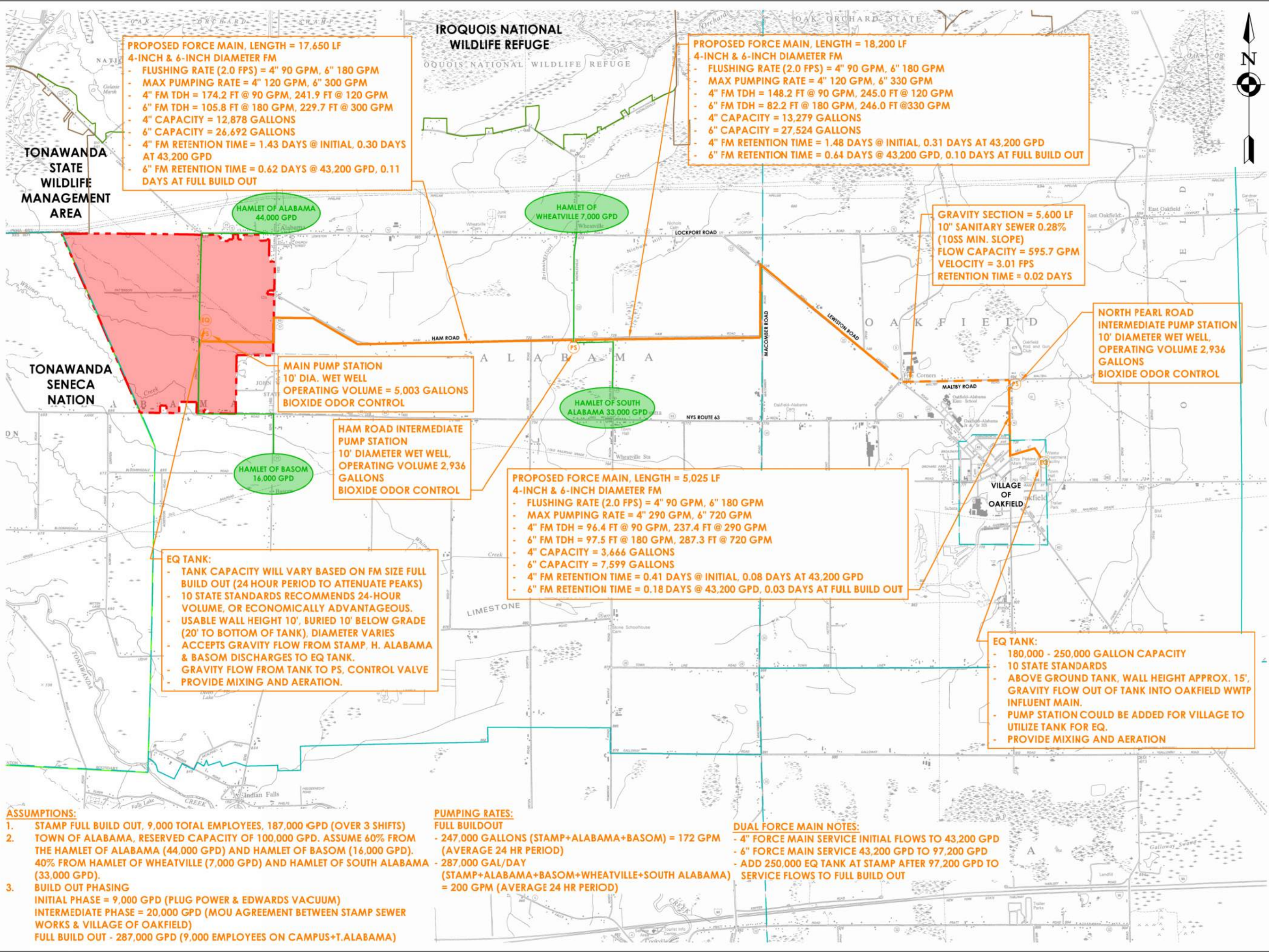
Station Piping	
25 feet of	6 inch piping
0 feet of	4 inch piping

Time to fill wet well 17.68 min
Time to empty wet well -17.68 min



Proposed Wet Well Conditions

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Date last accessed: 1/29/2025 10:49 AM
Date last plotted: 1/29/2025 10:32 AM
Plotted By: Zach Anderson



PROPOSED FORCE MAIN, LENGTH = 17,650 LF
4-INCH & 6-INCH DIAMETER FM
- FLUSHING RATE (2.0 FPS) = 4" 90 GPM, 6" 180 GPM
- MAX PUMPING RATE = 4" 120 GPM, 6" 300 GPM
- 4" FM TDH = 174.2 FT @ 90 GPM, 241.9 FT @ 120 GPM
- 6" FM TDH = 105.8 FT @ 180 GPM, 229.7 FT @ 300 GPM
- 4" CAPACITY = 12,878 GALLONS
- 6" CAPACITY = 26,692 GALLONS
- 4" FM RETENTION TIME = 1.43 DAYS @ INITIAL, 0.30 DAYS AT 43,200 GPD
- 6" FM RETENTION TIME = 0.62 DAYS @ 43,200 GPD, 0.11 DAYS AT FULL BUILD OUT

PROPOSED FORCE MAIN, LENGTH = 18,200 LF
4-INCH & 6-INCH DIAMETER FM
- FLUSHING RATE (2.0 FPS) = 4" 90 GPM, 6" 180 GPM
- MAX PUMPING RATE = 4" 120 GPM, 6" 330 GPM
- 4" FM TDH = 148.2 FT @ 90 GPM, 245.0 FT @ 120 GPM
- 6" FM TDH = 82.2 FT @ 180 GPM, 246.0 FT @ 330 GPM
- 4" CAPACITY = 13,279 GALLONS
- 6" CAPACITY = 27,524 GALLONS
- 4" FM RETENTION TIME = 1.48 DAYS @ INITIAL, 0.31 DAYS AT 43,200 GPD
- 6" FM RETENTION TIME = 0.64 DAYS @ 43,200 GPD, 0.10 DAYS AT FULL BUILD OUT

GRAVITY SECTION = 5,600 LF
10" SANITARY SEWER 0.28% (10SS MIN. SLOPE)
FLOW CAPACITY = 595.7 GPM
VELOCITY = 3.01 FPS
RETENTION TIME = 0.02 DAYS

NORTH PEARL ROAD INTERMEDIATE PUMP STATION
10" DIAMETER WET WELL,
OPERATING VOLUME 2,936 GALLONS
BIOXIDE ODOR CONTROL

MAIN PUMP STATION
10' DIA. WET WELL
OPERATING VOLUME = 5,003 GALLONS
BIOXIDE ODOR CONTROL

HAM ROAD INTERMEDIATE PUMP STATION
10' DIAMETER WET WELL,
OPERATING VOLUME 2,936 GALLONS
BIOXIDE ODOR CONTROL

PROPOSED FORCE MAIN, LENGTH = 5,025 LF
4-INCH & 6-INCH DIAMETER FM
- FLUSHING RATE (2.0 FPS) = 4" 90 GPM, 6" 180 GPM
- MAX PUMPING RATE = 4" 290 GPM, 6" 720 GPM
- 4" FM TDH = 96.4 FT @ 90 GPM, 237.4 FT @ 290 GPM
- 6" FM TDH = 97.5 FT @ 180 GPM, 287.3 FT @ 720 GPM
- 4" CAPACITY = 3,666 GALLONS
- 6" CAPACITY = 7,599 GALLONS
- 4" FM RETENTION TIME = 0.41 DAYS @ INITIAL, 0.08 DAYS AT 43,200 GPD
- 6" FM RETENTION TIME = 0.18 DAYS @ 43,200 GPD, 0.03 DAYS AT FULL BUILD OUT

EQ TANK:
- TANK CAPACITY WILL VARY BASED ON FM SIZE FULL BUILD OUT (24 HOUR PERIOD TO ATTENUATE PEAKS)
- 10 STATE STANDARDS RECOMMENDS 24-HOUR VOLUME, OR ECONOMICALLY ADVANTAGEOUS.
- USABLE WALL HEIGHT 10', BURIED 10' BELOW GRADE (20' TO BOTTOM OF TANK), DIAMETER VARIES
- ACCEPTS GRAVITY FLOW FROM STAMP, H. ALABAMA & BASOM DISCHARGES TO EQ TANK.
- GRAVITY FLOW FROM TANK TO PS, CONTROL VALVE
- PROVIDE MIXING AND AERATION.

EQ TANK:
- 180,000 - 250,000 GALLON CAPACITY
- 10 STATE STANDARDS
- ABOVE GROUND TANK, WALL HEIGHT APPROX. 15', GRAVITY FLOW OUT OF TANK INTO OAKFIELD WWTP INFLUENT MAIN.
- PUMP STATION COULD BE ADDED FOR VILLAGE TO UTILIZE TANK FOR EQ.
- PROVIDE MIXING AND AERATION

ASSUMPTIONS:
1. STAMP FULL BUILD OUT, 9,000 TOTAL EMPLOYEES, 187,000 GPD (OVER 3 SHIFTS)
2. TOWN OF ALABAMA, RESERVED CAPACITY OF 100,000 GPD. ASSUME 60% FROM THE HAMLET OF ALABAMA (44,000 GPD) AND HAMLET OF BASOM (16,000 GPD). 40% FROM HAMLET OF WHEATVILLE (7,000 GPD) AND HAMLET OF SOUTH ALABAMA (33,000 GPD).
3. BUILD OUT PHASING
INITIAL PHASE = 9,000 GPD (PLUG POWER & EDWARDS VACUUM)
INTERMEDIATE PHASE = 20,000 GPD (MOU AGREEMENT BETWEEN STAMP SEWER WORKS & VILLAGE OF OAKFIELD)
FULL BUILD OUT - 287,000 GPD (9,000 EMPLOYEES ON CAMPUS+T.ALABAMA)

PUMPING RATES:
FULL BUILDOUT
- 247,000 GALLONS (STAMP+ALABAMA+BASOM) = 172 GPM (AVERAGE 24 HR PERIOD)
- 287,000 GAL/DAY (STAMP+ALABAMA+BASOM+WHEATVILLE+SOUTH ALABAMA) = 200 GPM (AVERAGE 24 HR PERIOD)

DUAL FORCE MAIN NOTES:
- 4" FORCE MAIN SERVICE INITIAL FLOWS TO 43,200 GPD
- 6" FORCE MAIN SERVICE 43,200 GPD TO 97,200 GPD
- ADD 250,000 EQ TANK AT STAMP AFTER 97,200 GPD TO SERVICE FLOWS TO FULL BUILD OUT



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Fairport, NY 14450
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NY ENGINEERING FIRM CERTIFICATE #018330

PROJECT INFORMATION

Project Number
R15.15981.00
Client Name
GENESEE COUNTY ECONOMIC DEVELOPMENT CENTER
Project Name
WNY STAMP - OAKFIELD FORCE MAIN

Project Address
GENESEE COUNTY, NY

SHEET INFORMATION

Issued
10/4/2024
Scale
AS NOTED
Drawn By
ZLA
Checked By
ARK
Drawing Title

VILLAGE OF OAKFIELD DISCHARGE FORCE MAIN SIZING - OPTION 4 DUAL 4-INCH & 6-INCH FORCE MAIN
Drawing Number

**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
Main Pump Station Wet Well Sizing
January 2025**

Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	247,000 gpd
Top Elevation	669.00 feet	Average Flow	171.5 gpm
Invert Elevation	658.64 feet	Peak Flow	686.1 gpm
Bottom Elevation	646.12 feet	Required Wet Well	2,573 gallons
Total Wet Well Volume	6,177 gallons		
Future Conditions		Present Conditions	
Pump "Off"	647.12 feet	Pump "Off"	647.12 feet
Lead Pump "On"	655.64 feet	Lead Pump "On"	655.64 feet
Lag Pump "On"	656.64 feet	Lag Pump "On"	656.64 feet
Operating Volume	5,003 gallons	Operating Volume	5,003 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	718.00 feet	Force Main Length	17,650 feet
Rim Elevation	723.00 feet	PVC Pipe DIPS	
		4-inch has ID of	4.230 inches
		6-inch has ID of	6.090 inches
Elevation of Forcemain		Capacity 4-inch	12,878 gallons
High Elevation	725.00 feet	Capacity 6-inch	26,692 gallons
Low Elevation	647.12 feet	4" Minimum Pumping Rate	87 gpm
		4" Minimum Pumping Rate	130 gpm

4-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	78.0	17,650	0.0	78.0
30	78.0	17,650	12.6	90.6
60	78.0	17,650	45.4	123.4
90	78.0	17,650	96.2	174.2
95	78.0	17,650	106.3	184.3
100	78.0	17,650	116.9	194.9
105	78.0	17,650	128.0	206.0
110	78.0	17,650	139.5	217.5
115	78.0	17,650	151.5	229.5
120	78.0	17,650	163.9	241.9
125	78.0	17,650	176.8	254.8
130	78.0	17,650	190.1	268.1

2.0 ft/sec
3.0 ft/sec

6-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	78.0	17,650	0.0	78.0
30	78.0	17,650	2.1	80.1
60	78.0	17,650	7.7	85.7
90	78.0	17,650	16.3	94.3
120	78.0	17,650	27.8	105.8
150	78.0	17,650	42.0	120.0
180	78.0	17,650	58.9	136.9
210	78.0	17,650	78.4	156.4
240	78.0	17,650	100.4	178.4
270	78.0	17,650	124.8	202.8
300	78.0	17,650	151.7	229.7
330	78.0	17,650	181.0	259.0

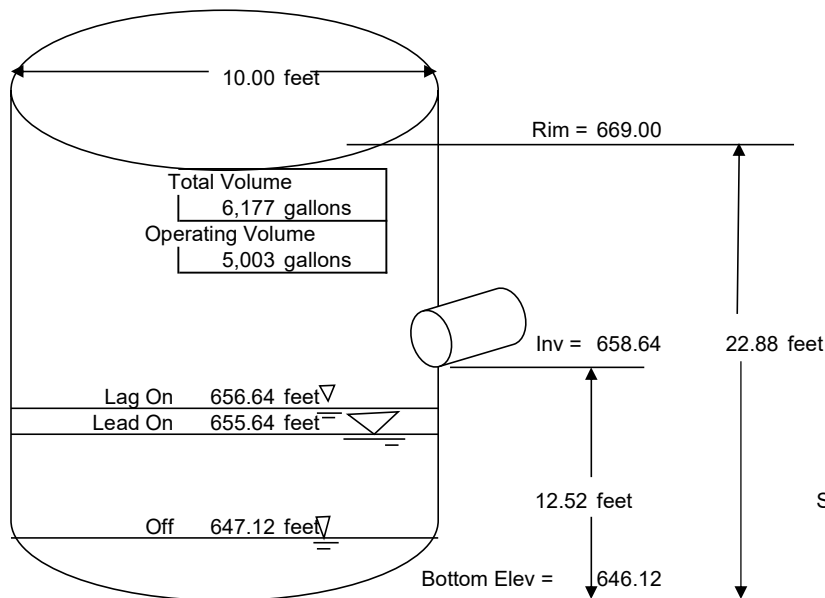
Force Main Retention Time: 4-Inch

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	12,878	1.43 days
MOU	20,000	12,878	0.64 days
Switch Over	43,200	12,878	0.30 days
Full Build	247,000	12,878	0.05 days

Force Main Retention Time: 6-Inch

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	26,692	2.97 days
MOU	20,000	26,692	1.33 days
Switch Over	43,200	26,692	0.62 days
Full Build	247,000	26,692	0.11 days

Time to fill wet well 29.17 min
Time to empty wet well -29.17 min



Proposed Wet Well Conditions

**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
Ham Road Intermediate Pump Station Wet Well Sizing
January 2025**

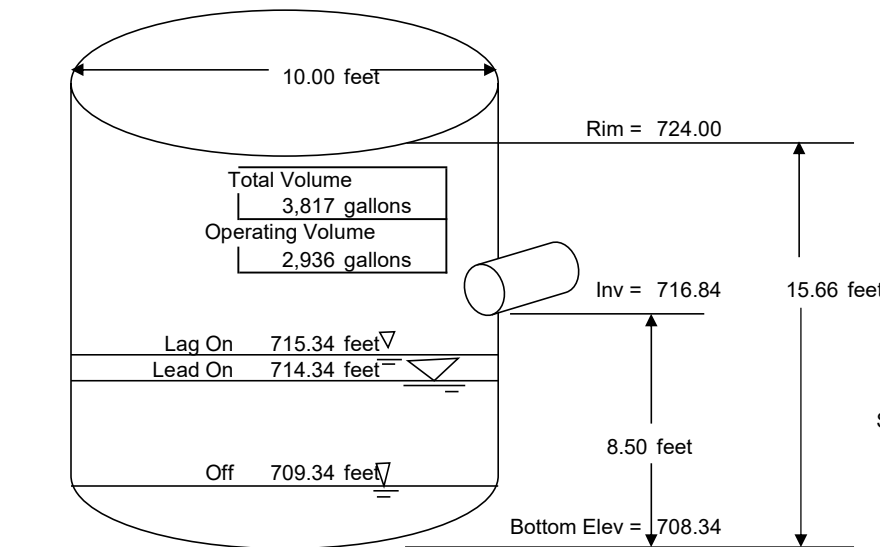
Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	287,000 gpd
Top Elevation	724.00 feet	Average Flow	199.3 gpm
Invert Elevation	716.84 feet	Peak Flow	797.2 gpm
Bottom Elevation	708.34 feet	Required Wet Well	2,990 gallons
Total Operating Volume	3,817 gallons		
Future Conditions		Present Conditions	
Pump "Off"	709.34 feet	Pump "Off"	709.34 feet
Lead Pump "On"	714.34 feet	Lead Pump "On"	714.34 feet
Lag Pump "On"	715.34 feet	Lag Pump "On"	715.34 feet
Operating Volume	2,936 gallons	Operating Volume	2,936 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	756.00 feet	Force Main Length	18,200 feet
Rim Elevation	762.00 feet	PVC Pipe DIPS	
		4-inch has ID of	4.230 inches
		6-inch has ID of	6.090 inches
Elevation of Forcemain		Capacity 4-inch	13,279 gallons
High Elevation	758.00 feet	Capacity 6-inch	27,524 gallons
Low Elevation	709.34 feet	4" Minimum Pumping Rate	87 gpm
		4" Minimum Pumping Rate	130 gpm
		6" Minimum Pumping Rate	180 gpm
		6" Minimum Pumping Rate	270 gpm

4-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	49.0	18,200	0.0	49.0
30	49.0	18,200	13.0	62.0
60	49.0	18,200	46.8	95.8
90	49.0	18,200	99.2	148.2
95	49.0	18,200	109.6	158.6
100	49.0	18,200	120.6	169.6
105	49.0	18,200	132.0	181.0
110	49.0	18,200	143.8	192.8
115	49.0	18,200	156.2	205.2
120	49.0	18,200	169.0	218.0
125	49.0	18,200	182.2	231.2
130	49.0	18,200	196.0	245.0

Time to fill wet well 14.73 min
Time to empty wet well -14.73 min

2.0 ft/sec
3.0 ft/sec

6-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	49.0	18,200	0.0	49.0
30	49.0	18,200	2.2	51.2
60	49.0	18,200	7.9	56.9
90	49.0	18,200	16.8	65.8
130	49.0	18,200	33.2	82.2
160	49.0	18,200	48.8	97.8
190	49.0	18,200	67.1	116.1
220	49.0	18,200	88.0	137.0
250	49.0	18,200	111.5	160.5
280	49.0	18,200	137.5	186.5
310	49.0	18,200	166.1	215.1
340	49.0	18,200	197.0	246.0



Proposed Wet Well Conditions

Force Main Retention Time: 4-Inch

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	13,279	1.48 days
MOU	20,000	13,279	0.66 days
Switch Over	43,200	13,279	0.31 days
Full Build	287,000	13,279	0.05 days

Force Main Retention Time: 6-Inch

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	27,524	3.06 days
MOU	20,000	27,524	1.38 days
Switch Over	43,200	27,524	0.64 days
Full Build	287,000	27,524	0.10 days

**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
North Pearl Road Intermediate Pump Station Wet Well Sizing
January 2025**

Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	287,000 gpd
Top Elevation	691.00 feet	Average Flow	199.3 gpm
Invert Elevation	675.80 feet	Peak Flow	797.2 gpm
Bottom Elevation	665.80 feet	Required Wet Well	2,990 gallons
Total Operating Volume	4,697 gallons		
Future Conditions		Present Conditions	
Pump "Off"	666.80 feet	Pump "Off"	666.80 feet
Lead Pump "On"	672.80 feet	Lead Pump "On"	672.80 feet
Lag Pump "On"	673.80 feet	Lag Pump "On"	673.80 feet
Operating Volume	3,523 gallons	Operating Volume	3,523 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	713.00 feet	Force Main Length	5,025 feet
Rim Elevation	718.00 feet	PVC Pipe DIPS	
		4-inch has ID of	4.230 inches
		6-inch has ID of	6.090 inches
Elevation of Forcemain		Capacity 4-inch	3,666 gallons
High Elevation	735.00 feet	Capacity 6-inch	7,599 gallons
Low Elevation	666.80 feet	4" Minimum Pumping Rate	87 gpm
		4" Minimum Pumping Rate	130 gpm
		6" Minimum Pumping Rate	180 gpm
		6" Minimum Pumping Rate	270 gpm

Time to fill wet well 17.68 min
Time to empty wet well -17.68 min

4-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	69.0	5,025	0.0	69.0
30	69.0	5,025	3.6	72.6
60	69.0	5,025	12.9	81.9
90	69.0	5,025	27.4	96.4
120	69.0	5,025	46.7	115.7
150	69.0	5,025	70.5	139.5
180	69.0	5,025	98.9	167.9
210	69.0	5,025	131.5	200.5
240	69.0	5,025	168.4	237.4
270	69.0	5,025	209.5	278.5
290	69.0	5,025	239.1	308.1
320	69.0	5,025	286.9	355.9

2.0 ft/sec

3.0 ft/sec

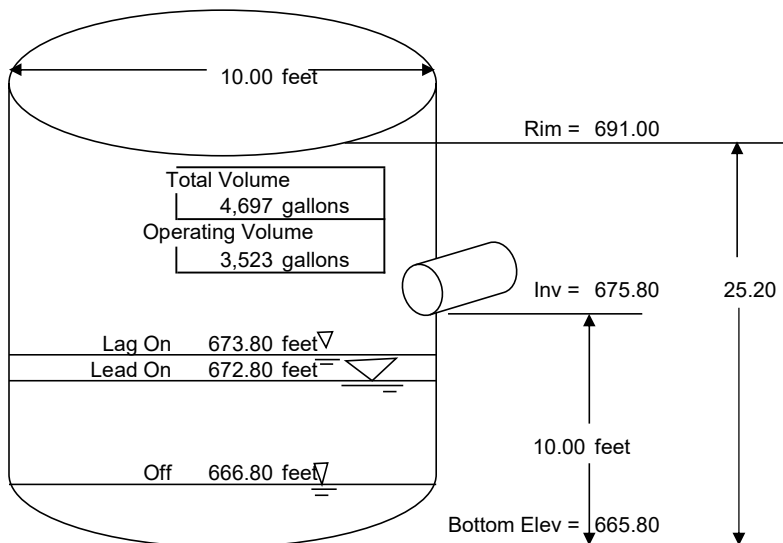
6-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	69.0	5,025	0.0	69.0
120	69.0	5,025	7.9	76.9
150	69.0	5,025	12.0	81.0
180	69.0	5,025	16.8	85.8
210	69.0	5,025	22.3	91.3
240	69.0	5,025	28.5	97.5
270	69.0	5,025	35.5	104.5
300	69.0	5,025	43.1	112.1
330	69.0	5,025	51.5	120.5
360	69.0	5,025	60.5	129.5
390	69.0	5,025	70.1	139.1
720	69.0	5,025	218.3	287.3

Force Main Retention Time: 4-Inch

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time	
Initial	9,000	3,666	0.41	days
MOU	20,000	3,666	0.18	days
Switch Over	43,200	3,666	0.08	days
Full Build	287,000	3,666	0.01	days

Force Main Retention Time: 6-Inch

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time	
Initial	9,000	7,599	0.84	days
MOU	20,000	7,599	0.38	days
Switch Over	43,200	7,599	0.18	days
Full Build	287,000	7,599	0.03	days



Proposed Wet Well Conditions

Appendix K

Phase 2 Dual 4-inch and 6-Inch Force Main Design Calculations, Wet Well Calcs, and System Curves

**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
Main Pump Station Wet Well Sizing
January 2025**

Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	247,000 gpd
Top Elevation	669.00 feet	Average Flow	171.5 gpm
Invert Elevation	658.64 feet	Peak Flow	686.1 gpm
Bottom Elevation	646.12 feet	Required Wet Well	2,573 gallons
Total Wet Well Volume	6,177 gallons		
Future Conditions		Present Conditions	
Pump "Off"	647.12 feet	Pump "Off"	647.12 feet
Lead Pump "On"	655.64 feet	Lead Pump "On"	655.64 feet
Lag Pump "On"	656.64 feet	Lag Pump "On"	656.64 feet
Operating Volume	5,003 gallons	Operating Volume	5,003 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	718.00 feet	Force Main Length	17,650 feet
Rim Elevation	723.00 feet	PVC Pipe DIPS	
		4-inch has ID of	4.230 inches
		6-inch has ID of	6.090 inches
Elevation of Forcemain		Capacity 4-inch	12,878 gallons
High Elevation	725.00 feet	Capacity 6-inch	26,692 gallons
Low Elevation	647.12 feet	4" Minimum Pumping Rate	87 gpm
		4" Minimum Pumping Rate	130 gpm

4-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	78.0	17,650	0.0	78.0
30	78.0	17,650	12.6	90.6
60	78.0	17,650	45.4	123.4
90	78.0	17,650	96.2	174.2
95	78.0	17,650	106.3	184.3
100	78.0	17,650	116.9	194.9
105	78.0	17,650	128.0	206.0
110	78.0	17,650	139.5	217.5
115	78.0	17,650	151.5	229.5
120	78.0	17,650	163.9	241.9
125	78.0	17,650	176.8	254.8
130	78.0	17,650	190.1	268.1

2.0 ft/sec
3.0 ft/sec

6-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	78.0	17,650	0.0	78.0
30	78.0	17,650	2.1	80.1
60	78.0	17,650	7.7	85.7
90	78.0	17,650	16.3	94.3
120	78.0	17,650	27.8	105.8
150	78.0	17,650	42.0	120.0
180	78.0	17,650	58.9	136.9
210	78.0	17,650	78.4	156.4
240	78.0	17,650	100.4	178.4
270	78.0	17,650	124.8	202.8
300	78.0	17,650	151.7	229.7
330	78.0	17,650	181.0	259.0

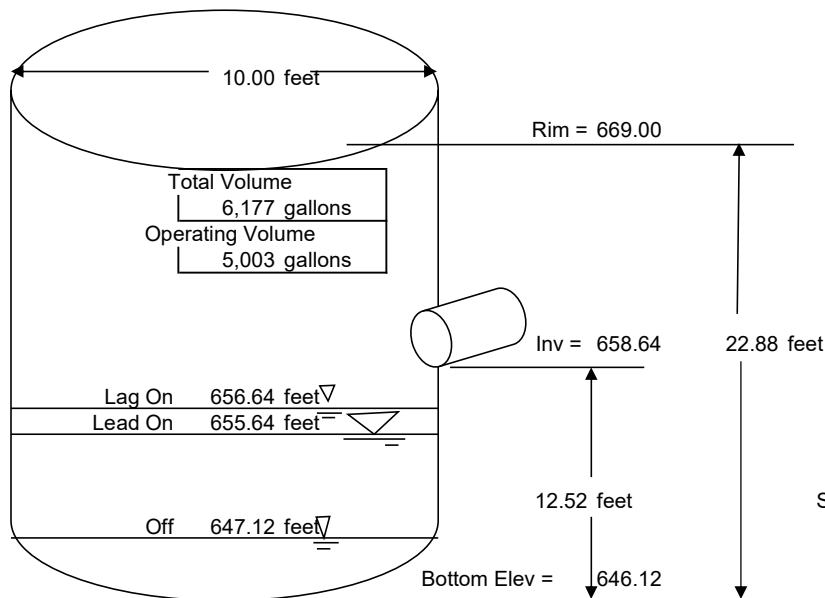
Force Main Retention Time: 4-Inch

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	12,878	1.43 days
MOU	20,000	12,878	0.64 days
Switch Over	43,200	12,878	0.30 days
Full Build	247,000	12,878	0.05 days

Force Main Retention Time: 6-Inch

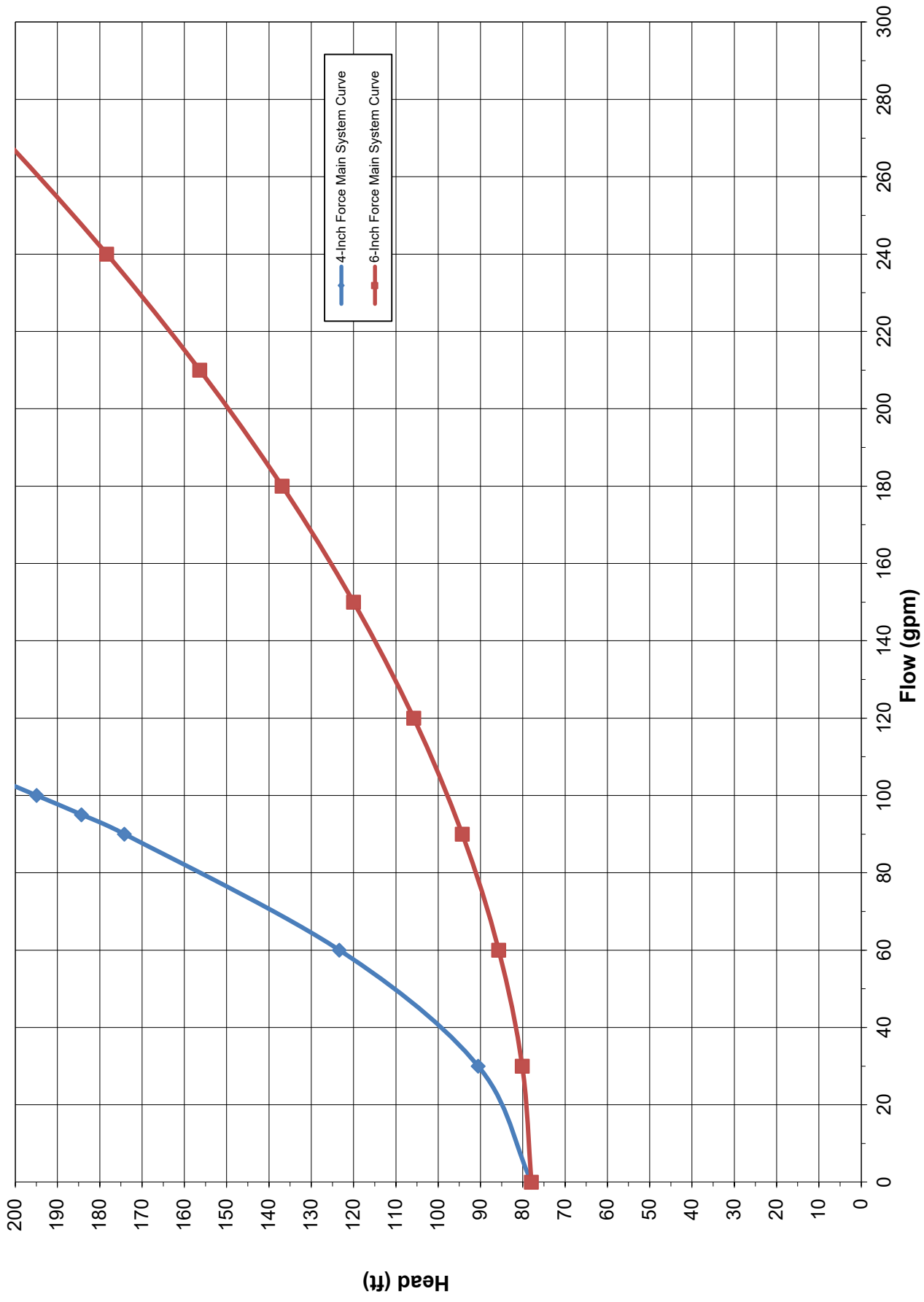
Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	26,692	2.97 days
MOU	20,000	26,692	1.33 days
Switch Over	43,200	26,692	0.62 days
Full Build	247,000	26,692	0.11 days

Time to fill wet well 29.17 min
Time to empty wet well -29.17 min



Proposed Wet Well Conditions

STAMP Onsite Main Pump Station System Curve



**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
Ham Road Intermediate Pump Station Wet Well Sizing
January 2025**

Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	287,000 gpd
Top Elevation	724.00 feet	Average Flow	199.3 gpm
Invert Elevation	716.84 feet	Peak Flow	797.2 gpm
Bottom Elevation	708.34 feet	Required Wet Well	2,990 gallons
Total Operating Volume	3,817 gallons		
Future Conditions		Present Conditions	
Pump "Off"	709.34 feet	Pump "Off"	709.34 feet
Lead Pump "On"	714.34 feet	Lead Pump "On"	714.34 feet
Lag Pump "On"	715.34 feet	Lag Pump "On"	715.34 feet
Operating Volume	2,936 gallons	Operating Volume	2,936 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	756.00 feet	Force Main Length	18,200 feet
Rim Elevation	762.00 feet	PVC Pipe DIPS	
		4-inch has ID of	4.230 inches
		6-inch has ID of	6.090 inches
Elevation of Forcemain		Capacity 4-inch	13,279 gallons
High Elevation	758.00 feet	Capacity 6-inch	27,524 gallons
Low Elevation	709.34 feet	4" Minimum Pumping Rate	87 gpm
		4" Minimum Pumping Rate	130 gpm
		6" Minimum Pumping Rate	180 gpm
		6" Minimum Pumping Rate	270 gpm

4-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	49.0	18,200	0.0	49.0
30	49.0	18,200	13.0	62.0
60	49.0	18,200	46.8	95.8
90	49.0	18,200	99.2	148.2
95	49.0	18,200	109.6	158.6
100	49.0	18,200	120.6	169.6
105	49.0	18,200	132.0	181.0
110	49.0	18,200	143.8	192.8
115	49.0	18,200	156.2	205.2
120	49.0	18,200	169.0	218.0
125	49.0	18,200	182.2	231.2
130	49.0	18,200	196.0	245.0

2.0 ft/sec
3.0 ft/sec

6-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	49.0	18,200	0.0	49.0
30	49.0	18,200	2.2	51.2
60	49.0	18,200	7.9	56.9
90	49.0	18,200	16.8	65.8
130	49.0	18,200	33.2	82.2
160	49.0	18,200	48.8	97.8
190	49.0	18,200	67.1	116.1
220	49.0	18,200	88.0	137.0
250	49.0	18,200	111.5	160.5
280	49.0	18,200	137.5	186.5
310	49.0	18,200	166.1	215.1
340	49.0	18,200	197.0	246.0

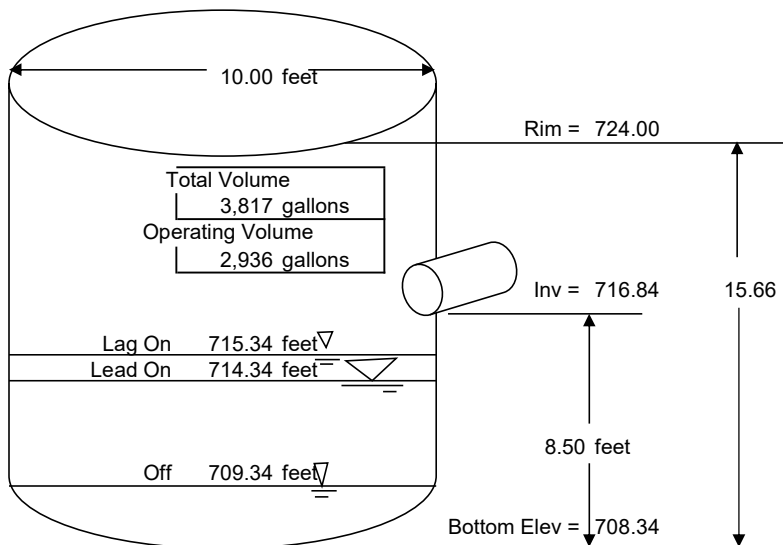
Force Main Retention Time: 4-Inch

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	13,279	1.48 days
MOU	20,000	13,279	0.66 days
Switch Over	43,200	13,279	0.31 days
Full Build	287,000	13,279	0.05 days

Force Main Retention Time: 6-Inch

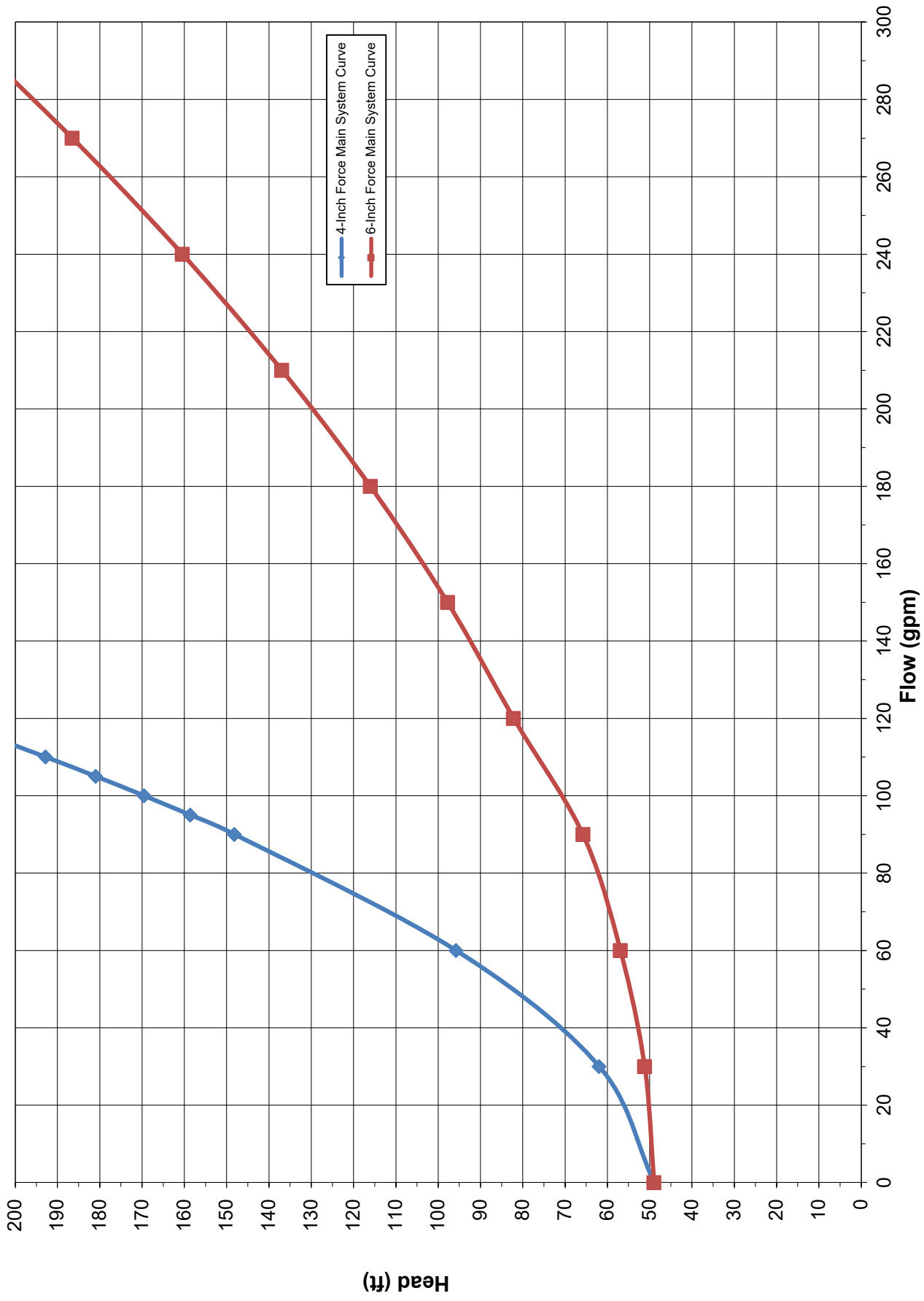
Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	27,524	3.06 days
MOU	20,000	27,524	1.38 days
Switch Over	43,200	27,524	0.64 days
Full Build	287,000	27,524	0.10 days

Time to fill wet well 14.73 min
Time to empty wet well -14.73 min



Proposed Wet Well Conditions

STAMP Ham Road Intermediate Pump Station System Curve



**Genesee County Economic Development Center
WNY Science and Technology Park (STAMP)
North Pearl Road Intermediate Pump Station Wet Well Sizing
January 2025**

Wet Well Information		Flow Information	
Diameter	10.00 feet	Daily Flow	287,000 gpd
Top Elevation	691.00 feet	Average Flow	199.3 gpm
Invert Elevation	675.80 feet	Peak Flow	797.2 gpm
Bottom Elevation	665.80 feet	Required Wet Well	2,990 gallons
Total Operating Volume	4,697 gallons		
Future Conditions		Present Conditions	
Pump "Off"	666.80 feet	Pump "Off"	666.80 feet
Lead Pump "On"	672.80 feet	Lead Pump "On"	672.80 feet
Lag Pump "On"	673.80 feet	Lag Pump "On"	673.80 feet
Operating Volume	3,523 gallons	Operating Volume	3,523 gallons
Discharge Manhole Information		Force Main Information	
Invert Elevation	713.00 feet	Force Main Length	5,025 feet
Rim Elevation	718.00 feet	PVC Pipe DIPS	
		4-inch has ID of	4.230 inches
		6-inch has ID of	6.090 inches
Elevation of Forcemain		Capacity 4-inch	3,666 gallons
High Elevation	735.00 feet	Capacity 6-inch	7,599 gallons
Low Elevation	666.80 feet	4" Minimum Pumping Rate	87 gpm
		4" Minimum Pumping Rate	130 gpm
		6" Minimum Pumping Rate	180 gpm
		6" Minimum Pumping Rate	270 gpm

Time to fill wet well 17.68 min
Time to empty wet well -17.68 min

4-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	69.0	5,025	0.0	69.0
30	69.0	5,025	3.6	72.6
60	69.0	5,025	12.9	81.9
90	69.0	5,025	27.4	96.4
120	69.0	5,025	46.7	115.7
150	69.0	5,025	70.5	139.5
180	69.0	5,025	98.9	167.9
210	69.0	5,025	131.5	200.5
240	69.0	5,025	168.4	237.4
270	69.0	5,025	209.5	278.5
290	69.0	5,025	239.1	308.1
320	69.0	5,025	286.9	355.9

2.0 ft/sec

3.0 ft/sec

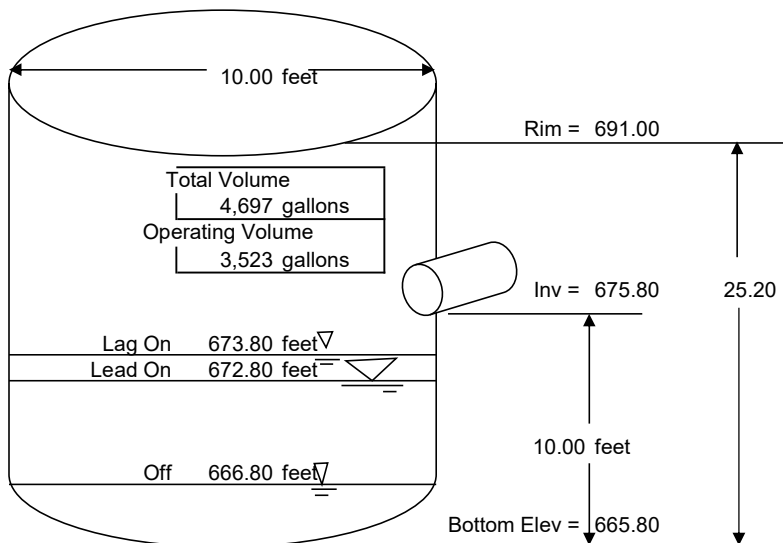
6-Inch Force Main System Curve				
Flow (gpm)	Static Head (ft)	Force Main Length (ft)	Friction Loss (ft)	System Curve Points (ft)
0	69.0	5,025	0.0	69.0
120	69.0	5,025	7.9	76.9
150	69.0	5,025	12.0	81.0
180	69.0	5,025	16.8	85.8
210	69.0	5,025	22.3	91.3
240	69.0	5,025	28.5	97.5
270	69.0	5,025	35.5	104.5
300	69.0	5,025	43.1	112.1
330	69.0	5,025	51.5	120.5
360	69.0	5,025	60.5	129.5
390	69.0	5,025	70.1	139.1
720	69.0	5,025	218.3	287.3

Force Main Retention Time: 4-Inch

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	3,666	0.41 days
MOU	20,000	3,666	0.18 days
Switch Over	43,200	3,666	0.08 days
Full Build	287,000	3,666	0.01 days

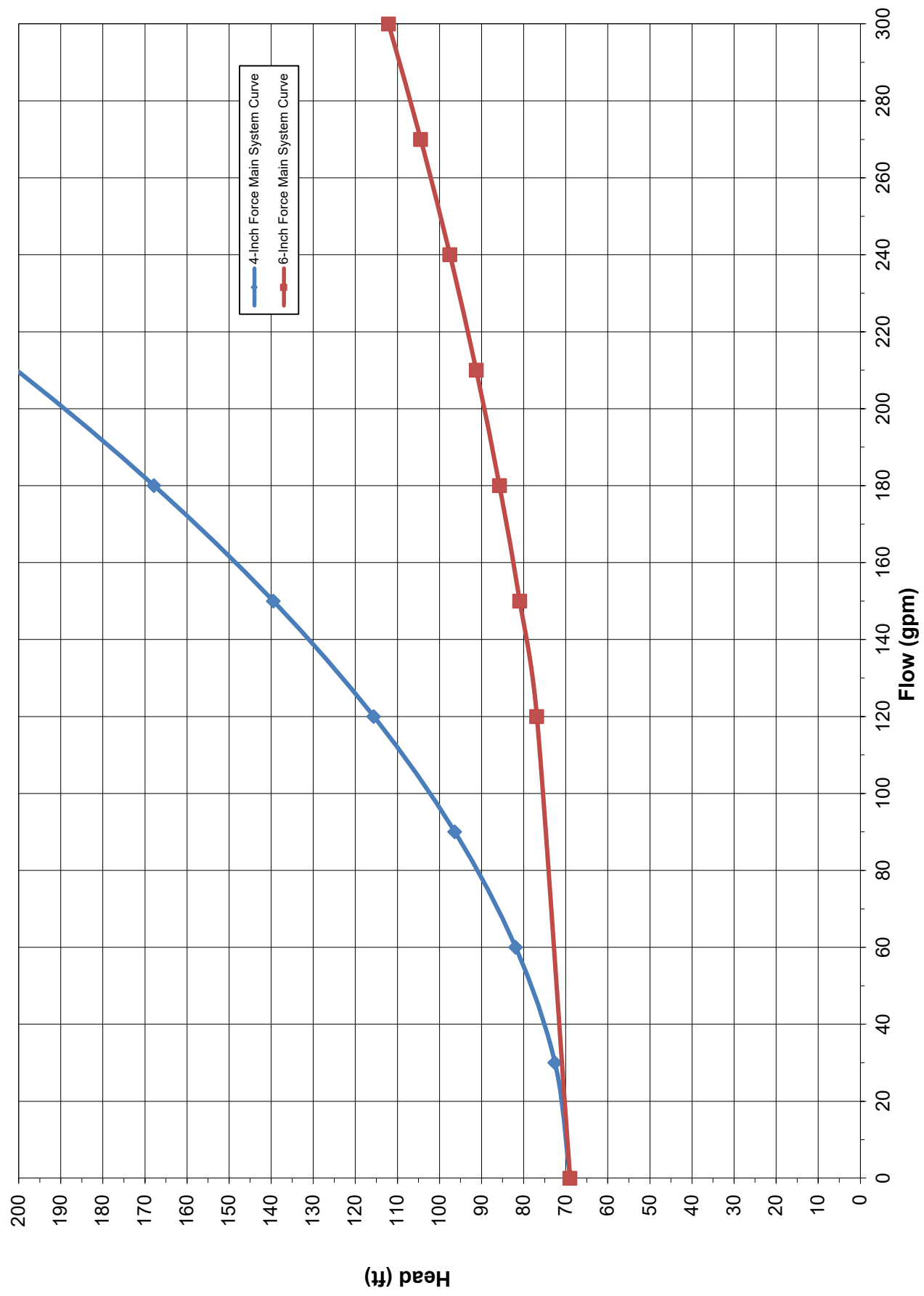
Force Main Retention Time: 6-Inch

Build Phase	Avg Flow Rate	Force Main Capacity	Retention Time
Initial	9,000	7,599	0.84 days
MOU	20,000	7,599	0.38 days
Switch Over	43,200	7,599	0.18 days
Full Build	287,000	7,599	0.03 days



Proposed Wet Well Conditions

STAMP North Pearl Road Intermediate Pump Station System Curve



Appendix L

STAMP Oakfield Force Main – Wetland Delineation Summary prepared by CC Environment & Planning



CC Environment & Planning

Katlyn Hojnacki
Senior Ecologist/Operations

March 7, 2024

Mark A. Masse
Genesee County Economic Development Center
99 MedTech Drive, Suite 106
Batavia, NY 14020
Email: mmasse@gcedc.com

Re: STAMP Oakfield Force Main – Wetland Delineation Summary

Dear Mark:

We have completed a field review of all drainages, streams, and wetlands within the Oakfield Force Main Area of Investigation (AOI) located along approximately 7.94 miles of roads within the Town of Oakfield, Genesee County, New York. The AOI extended to the edge of the right-of-way. Our review extended to all waters that are potentially regulated by state and federal agencies. The delineation was conducted in accordance with the U.S. Army Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1, and the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (v. 2.0), dated January 2012. Delineation tasks included a review of onsite conditions, field delineation, and sub-meter GPS survey of delineation. Deliverables include this delineation summary letter, delineation maps (Attachment A), photographs (Attachment B), wetland determination datasheets (Attachment C), and shapefiles of mapped resources (provided via email on 3-1-24).

Desktop Review Notes

There is one federally mapped wetland within the AOI (PEM1A), which is a freshwater emergent wetland. No state-mapped wetlands were within the AOI. There are three federally mapped stream crossings within the AOI, including Brinningstool Creek, an unnamed tributary to Oak Orchard Creek, and an unnamed tributary to Tonawanda Creek. These are state-mapped as Class C streams. Mapped resources are included on the delineation maps provided in Attachment A.

Field Mapped Wetlands and Streams

The AOI was visually inspected during a field visit conducted on February 26, 2024, by Katlyn Hojnacki, Senior Ecologist, and Ann Swanson, Environmental Technician, CC Environment & Planning. Areas to be mapped included any wetland and stream features including any permanent, seasonal, or intermittent streams and their bed and bank within the high-water mark (HWM) and wetland features showing appropriate vegetation, hydrology, and soils. Field investigation included inspection of floodplain and riparian areas associated with a stream or wetland.

One wetland and seven stream sections were present within the AOI. Throughout the AOI, deep roadside ditches were present. These ditches, which are non-jurisdictional features, were not mapped unless a stream was rerouted through it. Mapping was conducted using a Juniper Geode sub-meter GPS. The wetlands and streams were mapped to ensure that any aquatic feature potentially regulated by state and/or federal agencies was included within a polygon (see Figures 2-10 in Attachment A and photographic documentation in Attachment B). Table 1 below provides a description of the mapped wetlands and streams.

Wetland 47 was previously mapped as part of the overall STAMP wetland and stream delineation. This wetland is considered non-jurisdictional by USACE as detailed in the March 16, 2023 Approved Jurisdictional Determination. Tributary 3 was included within the Preliminary Jurisdictional Determination issued on March 16, 2023 as a jurisdictional water. Streams 2 and 4 begin on the opposite side of the road from the proposed force main route. Stormwater from the proposed side does flow through culverts under the road to act as the headwaters for these streams, but these stormwater features are non-jurisdictional.

All mapped wetlands and streams require a jurisdictional determination to confirm their regulatory status. The mapped wetlands and streams were provided to CPL and GCEDC digitally as georeferenced shapefiles for inclusion within the project survey database and to facilitate updated design, plan sheets, and impact calculations.

Table 1. STAMP Wetland and Stream Delineation						
ID	GPS Points	Map/ Photo ID	Flow Reg*/ Dir	Description/Classification/ Connectivity	Est Bank Width	Notes
S1	1-10	Figure 4/ Photo 1-4	I/N	Vegetated bottom, roadside ditch and ag drains combine to create stream.	8.3'-17.3'	
S2	11	Figure 5/ Photo 5-6	E/N	Vegetated bottom, stormwater flows under road to create stream on opposite side of the road.	-	Only roadside ditch within AOI.
S3	12-18	Figure 6/ Photo 7-8	P/N	Vegetated/gravel/mud bottom flows north to Oak Orchard Creek.	35.5'	Brinningstool Creek
S4	19	Figure 7/ Photo 9-10	E/N	Vegetated bottom, stormwater runoff from ag field flows into culvert to join stream on opposite side of road.	-	Only stormwater swale within AOI.
S5	20-28	Figure 8/ Photo 11-14	I/N	Vegetated bottom, water likely primarily stormwater runoff from school, flows north into large forested wetland.	9.1'-41.8'	

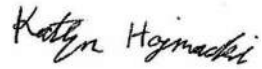


Table 1. STAMP Wetland and Stream Delineation						
ID	GPS Points	Map/ Photo ID	Flow Reg*/ Dir	Description/Classification/ Connectivity	Est Bank Width	Notes
S6	29-38	Figure 9/ Photo 15-16	P/NE	Vegetated/gravel/ mud. Unnamed tributary to Oak Orchard Creek.	23.8'-38.6'	Wetland adjacent to stream outside of AOI.
T3	39-48	Figure 10	I/NW	Vegetated. Unnamed tributary to Tonawanda Creek.	17.2'-26.9'	Jurisdictional. PJD March 16, 2023.
W47	-	Figure 3	NA	Palustrine emergent marsh along the roadside. Isolated.	0.06 acres	Non-jurisdictional. AJD issued March 16, 2023.

*P = Perennial, I = Intermittent, E = Ephemeral

Please contact me if you have any questions about the delineation and summary. If you require additional information, jurisdictional determination, or assistance with impact avoidance, minimization, and permitting please let me know.

Sincerely,



Katlyn Hojnacki, Senior Ecologist
CC Environment & Planning

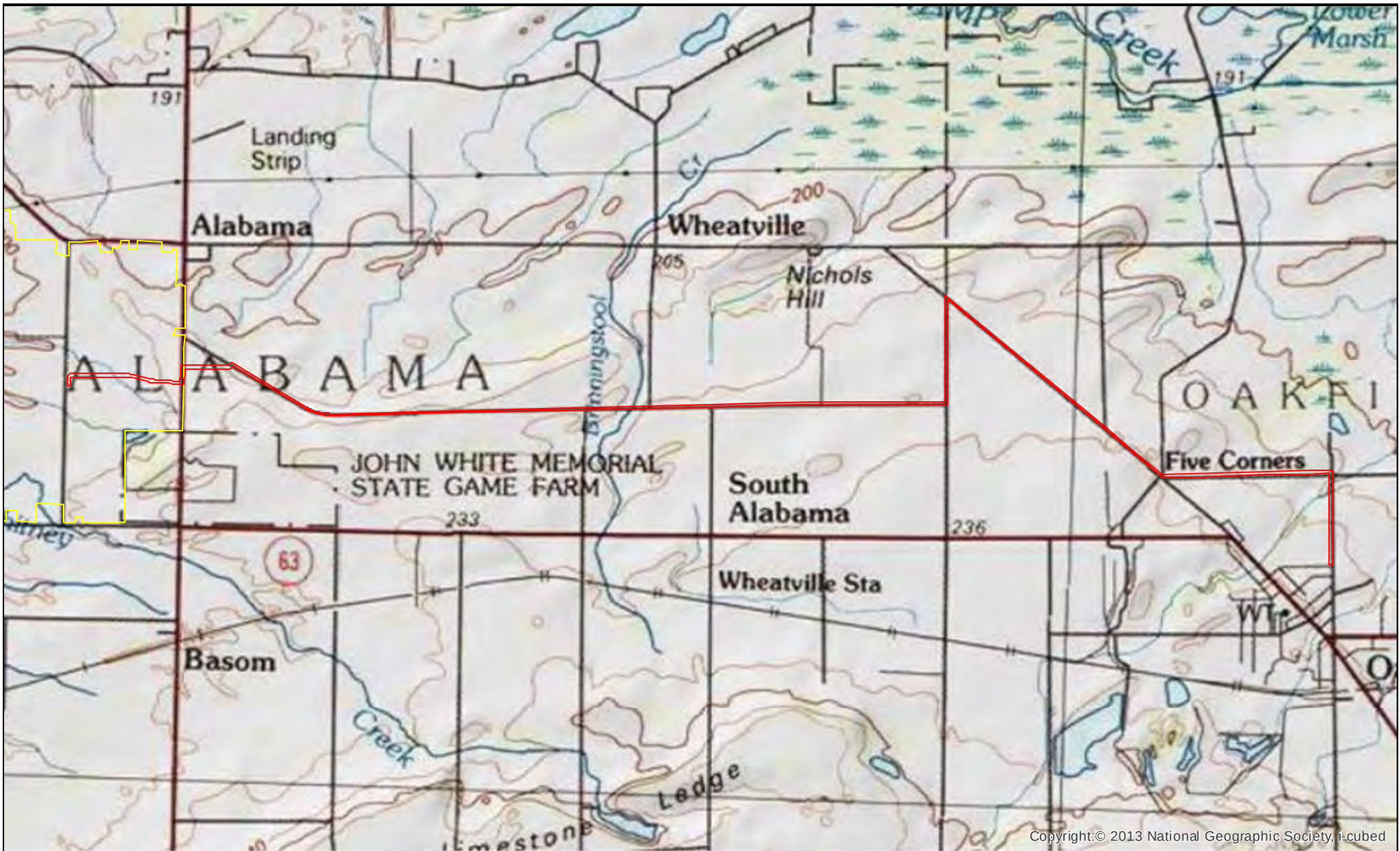
Attachment A – Figures

Attachment B – Photographs



Attachment A - Figures





0 0.75 1.5 3 Miles



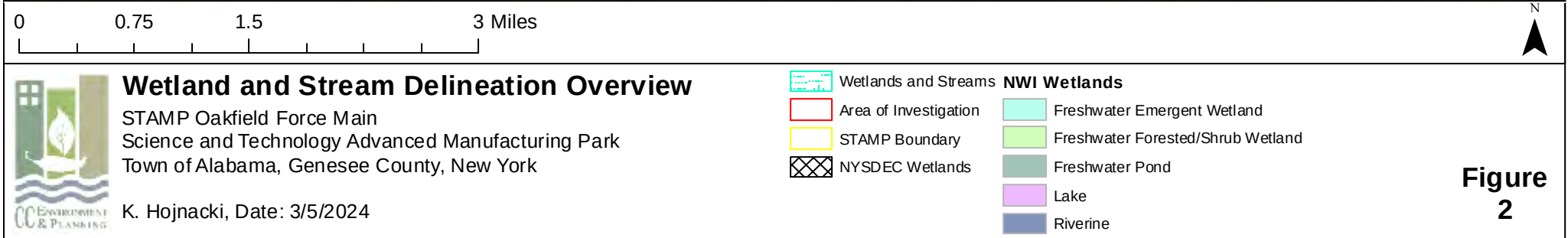
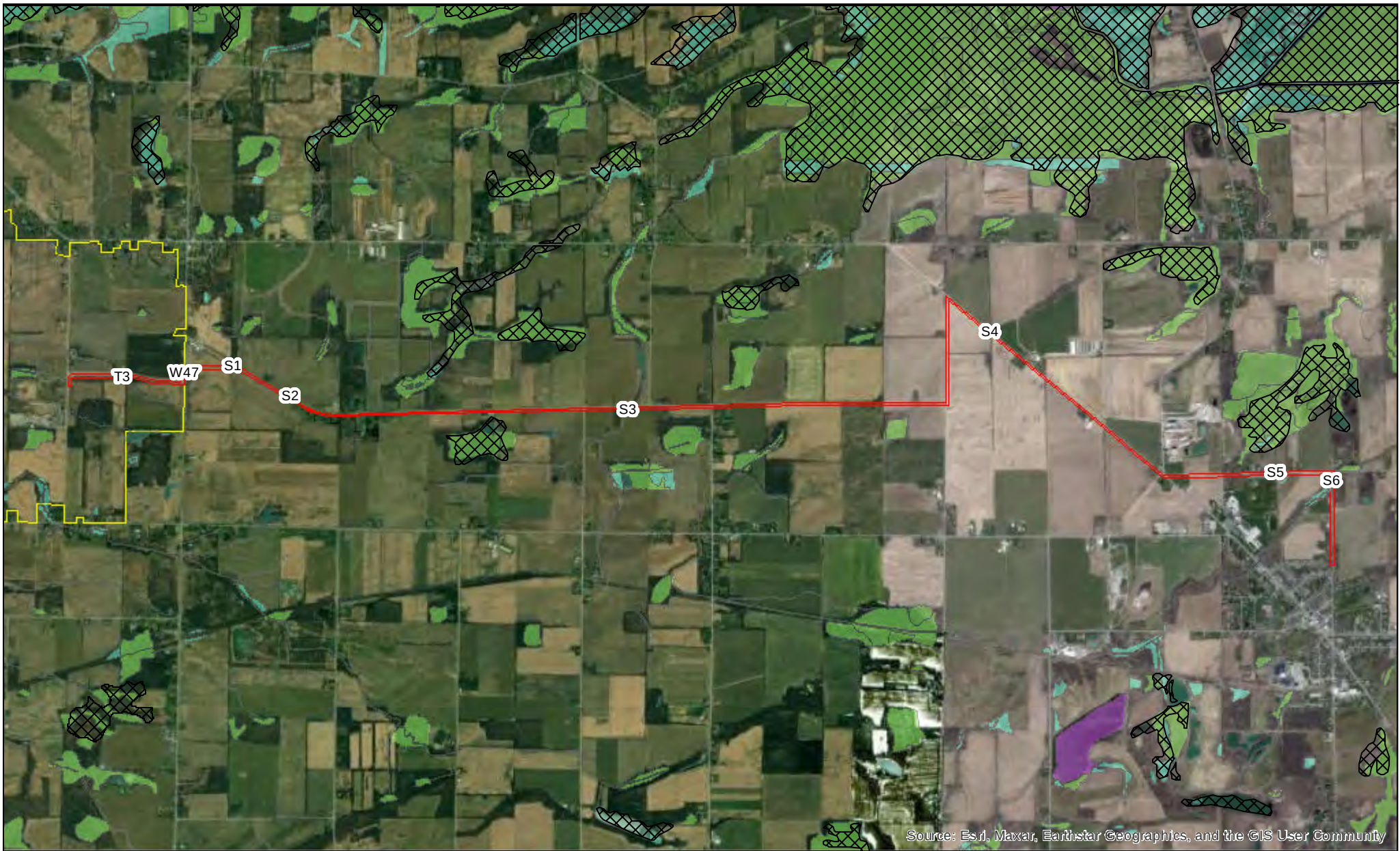
Topographic Map

STAMP Oakfield Force Main
Science and Technology Advanced Manufacturing Park
Town of Alabama, Genesee County, New York

K. Hojnacki, Date: 3/5/2024

- Area of Investigation
- STAMP Boundary

Figure
1



Wetland previously mapped as part of overall STAMP site. Covered under AJD issued March 16, 2023.

Alleghany Road (Route 63)

W47

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 0.01 0.02 0.04 Miles

N



Field Mapped Wetland/Stream

STAMP Oakfield Force Main
Science and Technology Advanced Manufacturing Park
Town of Alabama, Genesee County, New York

K. Hojnacki, Date: 3/1/2024

Wetlands and Streams

Area of Investigation

STAMP Boundary

NYSDEC Wetlands

NWI Wetlands

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Lake

Riverine

Figure
3



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 0.01 0.02 0.04 Miles



Field Mapped Wetland/Stream

STAMP Oakfield Force Main
Science and Technology Advanced Manufacturing Park
Town of Alabama, Genesee County, New York

K. Hojnacki, Date: 3/1/2024

• Waypoints

 Wetlands and Streams

 Area of Investigation

 NYSDEC Wetlands

NWI Wetlands

 Freshwater Emergent Wetland

 Freshwater Forested/Shrub Wetland

 Freshwater Pond

 Lake

 Riverine

Figure
4



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 0.01 0.02 0.04 Miles



Field Mapped Wetland/Stream

STAMP Oakfield Force Main
Science and Technology Advanced Manufacturing Park
Town of Alabama, Genesee County, New York

K. Hojnacki, Date: 3/1/2024

• Waypoints

 Wetlands and Streams

 Area of Investigation

 NYSDEC Wetlands

NWI Wetlands

 Freshwater Emergent Wetland

 Freshwater Forested/Shrub Wetland

 Freshwater Pond

 Lake

 Riverine

**Figure
5**



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 0.01 0.02 0.04 Miles



Field Mapped Wetland/Stream

STAMP Oakfield Force Main
Science and Technology Advanced Manufacturing Park
Town of Alabama, Genesee County, New York

K. Hojnacki, Date: 3/1/2024

• Waypoints

 Wetlands and Streams

 Area of Investigation

 NYSDEC Wetlands

NWI Wetlands

 Freshwater Emergent Wetland

 Freshwater Forested/Shrub Wetland

 Freshwater Pond

 Lake

 Riverine

**Figure
6**



0 0.01 0.02 0.04 Miles



Field Mapped Wetland/Stream

STAMP Oakfield Force Main
Science and Technology Advanced Manufacturing Park
Town of Alabama, Genesee County, New York

K. Hojnacki, Date: 3/1/2024

• Waypoints



Wetlands and Streams



Area of Investigation



NYSDEC Wetlands

NWI Wetlands

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Lake

Riverine

Figure
7



0 0.01 0.02 0.04 Miles



Field Mapped Wetland/Stream

STAMP Oakfield Force Main
Science and Technology Advanced Manufacturing Park
Town of Alabama, Genesee County, New York

K. Hojnacki, Date: 3/1/2024

• Waypoints



Wetlands and Streams



Area of Investigation



NYSDEC Wetlands

NWI Wetlands

Freshwater Emergent Wetland

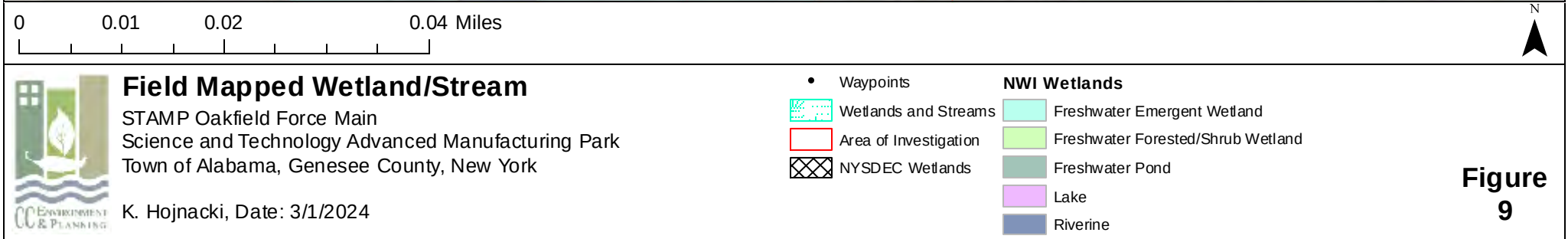
Freshwater Forested/Shrub Wetland

Freshwater Pond

Lake

Riverine

**Figure
8**





Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

0 0.01 0.02 0.04 Miles



Field Mapped Wetland/Stream

STAMP Oakfield Force Main
Science and Technology Advanced Manufacturing Park
Town of Alabama, Genesee County, New York

K. Hojnacki, Date: 3/7/2024

• Waypoints



Wetlands and Streams



Area of Investigation



NYSDEC Wetlands

NWI Wetlands

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Lake

Riverine

**Figure
10**

Attachment B - Photographs





STAMP Oakfield Force Main

Wetland and Stream Delineation - February 26, 2024



Photo 1

Waypoint 1, Stream 1, facing south, uphill between farm field and the field at the town barns.



Photo 2

Waypoint 4, Stream 1, facing north to roadside.



Photo 3

Waypoint 5, Stream 1, outlet of drainage pipe to join with roadside ditch.



Photo 4

Waypoint 7, Stream 1, another drainage pipe that outlets into roadside ditch.



STAMP Oakfield Force Main

Wetland and Stream Delineation - February 26, 2024



Photo 5

Waypoint 11A, Stream 2, facing south. Outlet of drainage pipe is under the snow, flows directly into culvert.



Photo 6

Waypoint 11B, Stream 2, facing north. Stream is prominent on north side of the road, flowing through farm field.



Photo 7

Waypoint 12, Stream 3, facing north towards Ham Road. Brinningstool Creek.



Photo 8

Waypoint 14, Stream 3, facing south (upstream).



STAMP Oakfield Force Main

Wetland and Stream Delineation - February 26, 2024



Photo 9

Waypoint 19A, Stream 4, facing south. Stormwater swale from farm field into road culvert.



Photo 10

Waypoint 19B, Stream 4, facing north across Lewiston Road. Stream begins on north side of road, flowing through farm field.



Photo 11

Waypoint 20, Stream 5, facing southeast. Stormwater from adjacent school grounds likely contributing most of the water to this drainage in the hedgerow.



Photo 12

Waypoint , Stream 5, southside of road, facing southwest.



STAMP Oakfield Force Main

Wetland and Stream Delineation - February 26, 2024



Photo 13

Waypoint 24, Stream 5, northside of the road, facing north, downstream.



Photo 14

Waypoint 28, Stream 5, northside of the road, facing south. A second, smaller pipe is present next to culvert pipe.



Photo 15

Waypoint 29, Stream 6, westside of road, facing west (upstream). Wetland surrounds the stream, but begins outside of AOI.



Photo 16

Waypoint 33, Stream 6, westside of road, facing northeast.



STAMP Oakfield Force Main

Wetland and Stream Delineation - February 26, 2024



Photo 17

Waypoint 39, Tributary 3, facing south. Intermittent stream flows under STAMP Drive.



Photo 18

Waypoint 43, Tributary 3, facing north toward STAMP Drive.

Appendix M

Foundation Design Preliminary Geotechnical Assessment



Foundation Design, P.C.

SOIL • BEDROCK • GROUNDWATER

March 15, 2024

The CPL Team
255 Woodcliff Drive, Suite 200
Fairport, New York 14450

Attention: Mr. Zach Anderson

Reference: STAMP – 20-inch Force Main Line
Village of Oakfield Alignment– HDD Creek Crossings
Preliminary Geotechnical Assessment, 4933.30-1

Dear Mr. Anderson:

This letter summarizes our preliminary geotechnical consultation on the referenced project. We understand that you are designing a 20-inch diameter Force Main that will run from the WNY-STAMP complex to the Village of Oakfield. The force main will consist of 20-inch diameter, DR-9 HDPE pipe. The pipe installation includes three HDD creek crossings. The exact length and depth of the pipe at the creek crossings has not been determined. The intent of this letter is to review the available nearby soil boring data, NRCS soils mapping, and NYSDEC water well data to assess the viability of installing the proposed force main via HDD methods.

We understand that three creek crossings will be required: Tributary 3 (located within the WNY-STAMP development), Brinningstool Creek, and an unnamed tributary to Oak Orchard Creek (located on North Pearl Street). Plans showing these crossing locations are enclosed. SJB Services performed soil borings B-6 and B-210 (20 feet deep) in 2016 as part of the overall WNY-STAMP site assessment; these soil borings were located close to Tributary 3. SJB Services also performed soil borings WB-53 and WB-54 (8 feet deep) in 2016; these soil borings were located close to the Brinningstool Creek crossing. No existing soil boring data is available close to the North Pearl Street creek crossing; we reviewed the NRCS mapping in assessing that location. A copy of the data reviewed is attached.

The CPL Team
March 15, 2024
Page 2

In general, the soil profile is expected to consist of glacial lake laid silt, sand, and clay over clayey glacial till. At Tributary 3, the upper loose to firm lake deposits appear to extend four to five feet below grade, transitioning into a firm to hard clayey silt to silty clay with sand and gravel. At Brinningstool Creek, the soil boring data indicates the roadway has been filled four to six feet. The NRCS mapping indicates that a four to five foot thick layer of loose to firm alluvial silt loam may lie immediately around the creek channel. Similarly, the NRCS mapping indicates that up to seven feet of loose to firm uniform sand/silt is present along North Pearl Street at the creek crossing.

To assess the bedrock depth and the overburden thickness, we reviewed the other soils data within the WNY-STAMP development and NYSDEC water well database. Deep soil borings within the WNY-STAMP development indicate that bedrock lies around 30 feet below grade at Tributary 3. Residential well logs east and west of Brinningstool Creek indicate that bedrock lies within 17 to 26 feet of the surface along Ham Road. Residential well logs east and west of the North Pearl Street creek crossing indicate that bedrock lies around 16 feet of the surface

Based on this background, off the following preliminary thoughts as you progress the conceptual design:

- We believe that these soils are typical of soil conditions in western New York where HDD installations have been successfully completed.
- For conceptual planning, assume that the pipe should extend at least 10 feet below the existing creek channel. The near-surface loose/firm creek deposits may prove challenging for HDD installations, as drilling mud may migrate horizontally within this zone. We recommend extending the pipe alignment into the firm to stiff clayey till formation below the upper flood deposits. This would provide a zone where higher confining pressures could be used for the installation work to progress. To achieve this, the pipe depth may need to extend 10 to 15 feet below the creek channel at the Brinningstool Creek and North Pearl Street crossing, depending on the actual thickness of the loose overburden in these areas. There appears to be adequate soil cover over the bedrock at the proposed locations for this type of installation depth to be feasible.
- Once your design progresses to the point where the alignment is fixed in plan and profile, additional exploration should be undertaken to define the soil conditions at the crossings. The soil borings should extend at least four feet deeper than the proposed alignment installation depth.



**Foundation
Design, P.C.**

SOIL • BEDROCK • GROUNDWATER

The CPL Team
March 15, 2024
Page 3

- With the subsurface data collected, an ACOE analysis should be performed to assess the maximum mud pressure that should exist behind the drill head.

We hope this letter meets your current needs. Feel free to call if you have questions regarding the conclusions outlined above.

Sincerely,

FOUNDATION DESIGN, P.C.

Jeffrey D. Netzbands, P.E., P.G.
Vice President
Enc.

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer

will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual site-wide subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note*

conspicuously that you've included the material for information purposes only. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.* Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists.*

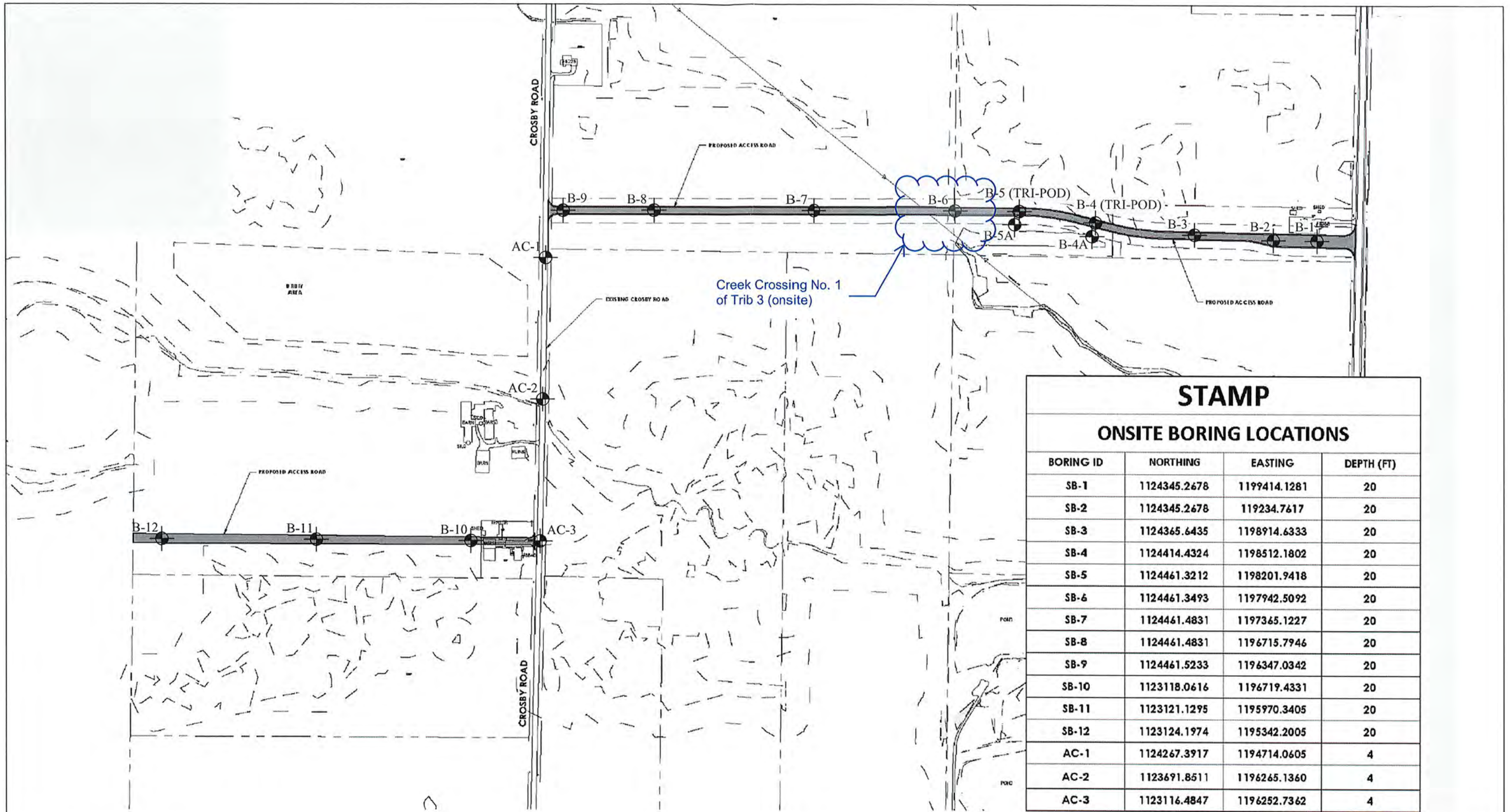


**GEOPROFESSIONAL
BUSINESS
ASSOCIATION**

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e-mail: info@geoprofessional.org www.geoprofessional.org

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STAMP			
ONSITE BORING LOCATIONS			
BORING ID	NORTHING	EASTING	DEPTH (FT)
SB-1	1124345.2678	1199414.1281	20
SB-2	1124345.2678	119234.7617	20
SB-3	1124365.6435	1198914.6333	20
SB-4	1124414.4324	1198512.1802	20
SB-5	1124461.3212	1198201.9418	20
SB-6	1124461.3493	1197942.5092	20
SB-7	1124461.4831	1197365.1227	20
SB-8	1124461.4831	1196715.7946	20
SB-9	1124461.5233	1196347.0342	20
SB-10	1123118.0616	1196719.4331	20
SB-11	1123121.1295	1195970.3405	20
SB-12	1123124.1974	1195342.2005	20
AC-1	1124267.3917	1194714.0605	4
AC-2	1123691.8511	1196265.1360	4
AC-3	1123116.4847	1196252.7362	4

- LEGEND:**
- B-1 APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING.
- AC-1 APPROXIMATE LOCATION AND DESIGNATION OF PAVEMENT CORE AND SUBGRADE SAMPLING TEST BORING

- NOTES:**
- 1.) BORINGS DESIGNATED WITH (TRI-POD) WERE ADVANCED USING A PORTABLE TRI-POD DRILL APPARATUS DUE TO WETLANDS PRESENT. ALL OTHER TEST BORINGS WERE COMPLETED WITH A CONVENTIONAL DRILL RIG.
- 2.) FIGURE DEVELOPED FROM SITE PLAN PREPARED BY CLARK PATTERSON LEE DESIGN PROFESSIONALS



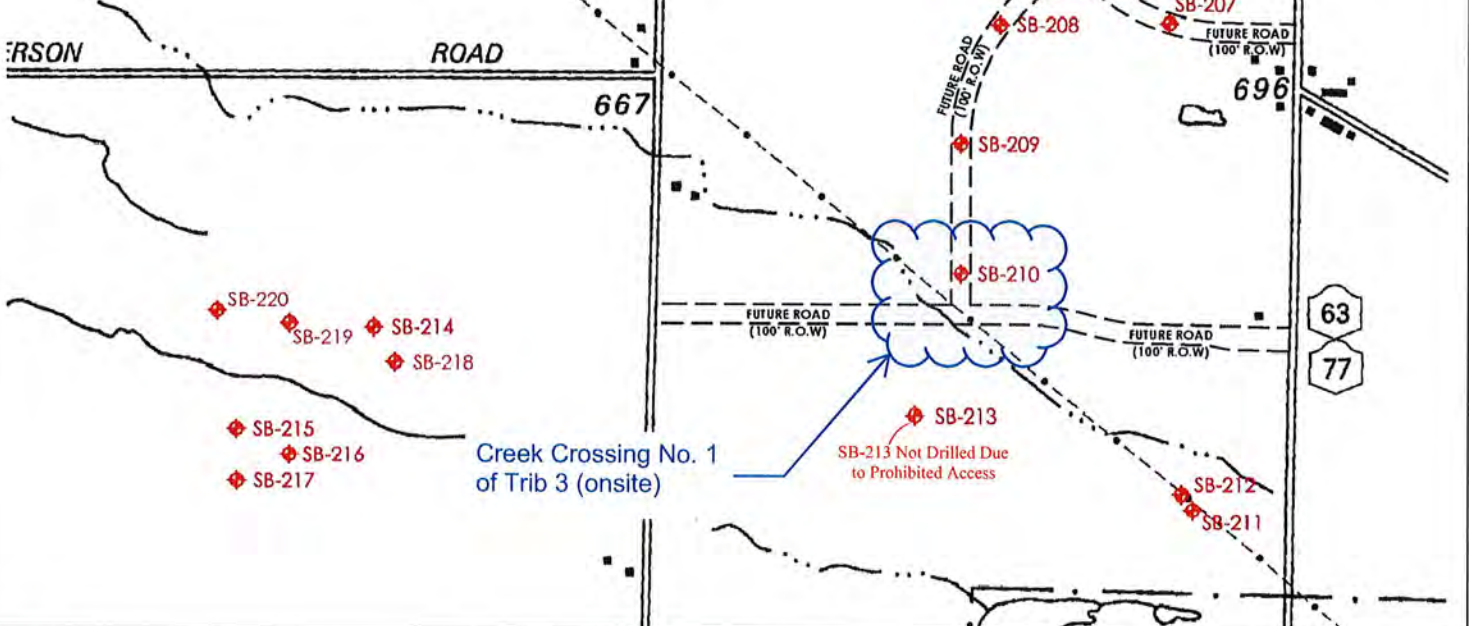
EMPIREGEO SERVICES INC a subsidiary of SJB Services, Inc.	GENESEE COUNTY ECONOMIC DEVELOPMENT CORPORATION WNY STAMP - MAIN ACCESS ROADWAY PROJECT TOWN OF ALABAMA, GENESEE COUNTY, NEW YORK		
	SUBSURFACE EXPLORATION PLAN	DR BY: WMA CHKD BY: JJD	SCALE: NTS DATE: 06/01/16 PROJECT NO.: BE-16-073 FIGURE NO: 2

DATE START <u>5/10/2016</u> FINISH <u>5/10/2016</u> SHEET <u>1</u> OF <u>1</u>	SJB SERVICES, INC. SUBSURFACE LOG		HOLE NO. <u>SB-6</u> SURF. ELEV <u>N.D.</u> G.W. DEPTH <u>See Notes</u>
PROJECT: <u>WNY STAMP MAIN ACCESS ROADWAY</u>		LOCATION: <u>TOWN OF ALABAMA</u> <u>GENESEE COUNTY, NEW YORK</u>	
PROJ. NO.: <u>BE-16-073</u>			

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER				SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N		
	1	2	3			TOPSOIL Brown and Dark Brown Silty CLAY, tr.sand, tr.organics (moist, FILL)	Driller notes Topsoil at the surface
		3	4		6		
	2	6	9			Brown Silty CLAY, tr.sand (moist, v.stiff, CL)	
		13	11		22		
5	3	7	9			Contains little f-c Sand	
		11	14		20		
	4	6	12				
		15	19		27		
	5	7	9			Contains tr.gravel	
		11	14		20		
10	6	8	9				
		8	12		17		
15	7	14	16			(hard)	
		17	18		33		
	8	10	20				No Free Standing Water encountered at Boring Completion
20		19	24		39	Boring Complete at 20.0'	

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW		CLASSIFIED BY: <u>Geologist</u>
DRILLER: <u>B. DELUDE</u>	DRILL RIG TYPE: <u>DIEDRICH D-50</u>	
METHOD OF INVESTIGATION <u>ASTM D-1586 USING HOLLOW STEM AUGERS</u>		

ONSITE SOIL BORE POINTS			
POINT #	DEPTH	NORTHING	EASTING
SB-201	20'	1128095.9181	1196784.1839
SB-202	20'	1127549.6714	1197209.2768
SB-203	20'	1127167.5879	1197588.7097
SB-204	20'	1126787.0622	1197966.5957
SB-205	20'	1126371.6694	1198379.1068
SB-206	20'	1126321.6742	1198428.7553
SB-207	20'	1125980.4648	1198933.8699
SB-208	20'	1125968.2668	1198058.7404
SB-209	20'	1125345.9995	1197854.7764
SB-210	20'	1124673.6907	1197854.7032
SB-211	20'	1123450.1568	1199062.3586
SB-212	20'	1123530.2262	1199003.2524
SB-213	20'	1123938.0575	1197617.8948
SB-214	20'	1124388.8231	1194800.0000
SB-215	20'	1123862.2511	1194084.2792
SB-216	20'	1123726.6523	1194360.2216
SB-217	20'	1123587.2659	1194087.3594
SB-218	30'	1124208.2919	1194909.9203
SB-219	30'	1124408.0567	1194362.8691
SB-220	30'	1124471.9969	1193986.1804



LEGEND:

NOTE:

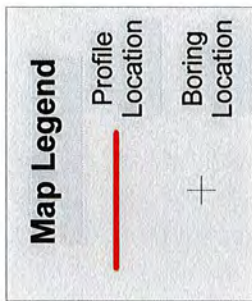
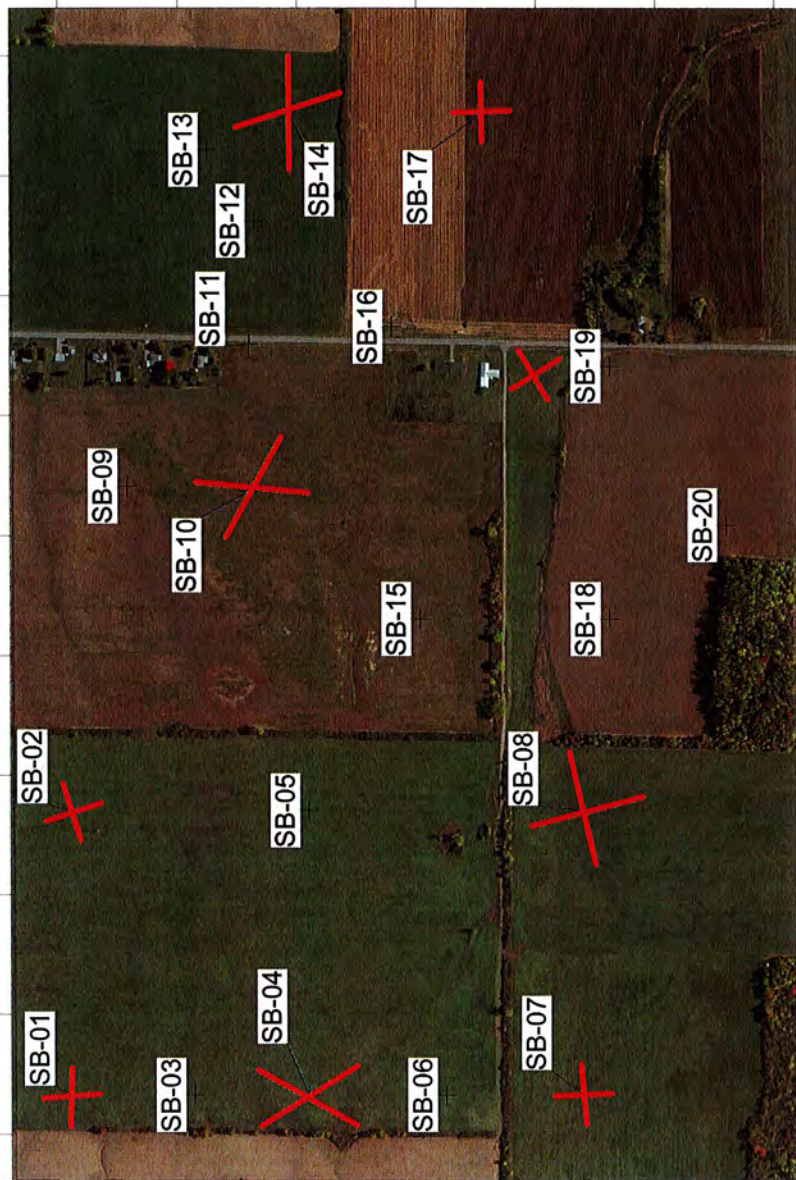


ADDITIONAL ROADWAY AND INFRASTRUCTURE TEST BORING LOCATIONS

DR BY: WMA	SCALE: NTS	PROJECT NO.: RE-16-073 A
CHKD BY: JJD	DATE: 09/21/16	FIGURE NO: 2

DATE START <u>6/24/2016</u> FINISH <u>6/24/2016</u> SHEET <u>1</u> OF <u>1</u>	SJB SERVICES, INC. SUBSURFACE LOG	HOLE NO. <u>SB-210</u> SURF. ELEV. <u>N.D.</u> G.W. DEPTH <u>See Notes</u>		
PROJECT: <u>ADDITIONAL SOIL BORINGS</u> LOCATION: <u>WNY STAMP MAIN ACCESS ROADWAY</u> PROJ. NO.: <u>BE-16-073-A</u> TOWN OF ALABAMA				
DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER	SOIL OR ROCK CLASSIFICATION	NOTES
		0/6 6/12 12/18 N		
	1	3 3	TOPSOIL Brown f-c SAND, some Clayey Silt, tr.organics (moist, FILL)	Driller notes approx. 9" of Topsoil at the surface
		5 6 8		
	2	4 4	Brown Clayey SILT, tr.sand (moist, stiff, ML)	
		5 6 9		
5	3	4 5	Red-Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		7 9 12		
	4	7 10	Contains little f-c Gravel (v.stiff)	
		13 13 23		
	5	5 7	Contains little f-c Sand	
		11 14 18		
10	6	14 14	Becomes Brown (hard)	
		17 19 31		
15	7	3 4	(moist-wet, stiff)	
		5 6 9		
	8	6 6		Free Standing Water recorded at 15.1' at Boring Completion
20		9 9 15	Boring Complete at 20.0'	

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY: Geologist
 DRILLER: D. DELUDE DRILL RIG TYPE: CME-550X
 METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS



Scale (feet)



Notes:

Basemap from GoogleEarth Image.

Seismic data from Geometrics SmartSeis. 4.5 Hz geophones at 10- and 20-foot spacing.

Prepared by:



Enviroscan, Inc.
1051 Columbia Ave.
Lancaster PA 17603
717-396-8922
www.enviroscan.com

Title:

Seismic Profile Locations

Project Location:

**WNY
Stamp Property
Alabama, New York**

Project Number
101747

Revision/Issue
11/21/2017

Original Scale
1"= 800 ft

Survey Ending Date
11/14/2017

Drawn by:
RJK

Approved by:
FKB

Figure

1

DATE:
 START 11/16/2017
 FINISH 11/17/2017
 SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SB-14
 SURF. ELEV 688.0' Est.
 G.W. DEPTH See Notes

PROJECT: WNY STAMP - PROJECT EAGLE
 PROJ. NO.: BE-17-224

LOCATION: CROSBY ROAD
ALABAMA, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER				REC (ft)	SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N			
	1	WOH	1				TOPSOIL	Driller noted approx. 11" of Topsoil at the surface.
	3		5		4	0.8	Dark Brown Clayey SILT, some f-c Sand, tr.gravel (moist, reworked)	
	2	8	18				Brown f-c SAND, some Silt, little f-c Gravel, occasional Silty seams (moist, compact, SM) Contains some f-c Gravel(v.compact)	WOH = Weight of Hammer and Rods
	21	26			39	1.4		
5	3	15	30					
	40	43			70	1.4		
	4	50/0.4			REF	0.1		
	5	50/0.1			REF	0.1		Sample #2 possible cobble fragments
10								REF = Sample Spoon Refusal
	6	18	21				Brown Silty CLAY, little f-c Sand, tr.gravel (moist, hard, CL) Contains some f-c Sand, little f-c Gravel	Samples #4 - #5 possible cobble fragments
	30	43			51	1.5		
	7	46	50/0.4		REF	0.5		
15	8	12	23				Contains little f-c Sand	Sample #7 possible cobble fragments
	24	21			47	1.3		
20								
	9	13	29				Contains some f-c Sand	Driller notes hard augering conditions from 10' - 35'
	40	42			69	1.1		
25								
	10	29	50/0.4		REF	0.2	(wet)	Sample #10 possible cobble fragments
30								
	11	25	41				Brown Clayey SILT, some f-c Sand, little f-c Gravel (moist-wet, hard, ML)	
	27	24			68	1.0		
35								
	12	6	10				Brown Silty CLAY, some f-c Sand, tr.gravel (moist, v.stiff, CL)	
	11	15			21	2.0		
40								

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: K. FULLER

DRILL RIG TYPE: CME-550

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE:
 START 11/16/2017
 FINISH 11/17/2017
 SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. SB-14
 SURF. ELEV 688.0' +/-
 G.W. DEPTH See Notes

PROJECT: WNY STAMP - PROJECT EAGLE

LOCATION: CROSBY ROAD

PROJ. NO.: BE-17-224

ALABAMA, NEW YORK

DEPTH FT.	SAMPL NO.	BLOWS ON SAMPLER				REC (ft)	SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N			
45	13	8	36				Contains occasional f-c Sand seams (hard)	
		50/0.4			REF	0.8		
50	14	2	2				Contains tr.sand	
		11	9		13	2.0		
55	15	4	6				Gray Brown Clayey SILT, little f-c Sand, tr.gravel (moist-wet, stiff, ML)	
		7	15		13	2.0		
60	16	7	11				Gray Silty CLAY, some f-c Sand, little f-c Gravel (moist-wet, v.stiff, CL)	Free Standing Water recorded at 47.8' at auger refusal & prior to coring.
		11	12		22	2.0		
65	17	49	50/0.3		REF	0.6	Gray f-c SAND, little f-c Gravel, little Silty Clay (moist-wet, hard, SC)	NQ '2' Size Rock Core
70							Gray to Dark Gray DOLOSTONE, medium hard, weathered, laminated to bedded, occasional horizontal fractures, occasional horizontal mechanical breaks, occasional soil horizontal seams, occasional gypsum partings, occasional vugs	RUN #1: 61.0' - 66.0' REC = 54% RQD = 24%
75							Becomes Light Gray, weathered to sound	RUN #2: 66.0' - 71.0' REC = 58% RQD = 30%
80							Boring Complete at 71.0'	Driller notes voids at approx. 63-64' and 67-68'
								Free Standing Water recorded at 48.7' following coring.
								2" PVC Groundwater Observation Well installed. See "Monitoring Well Completion Record" for Details.

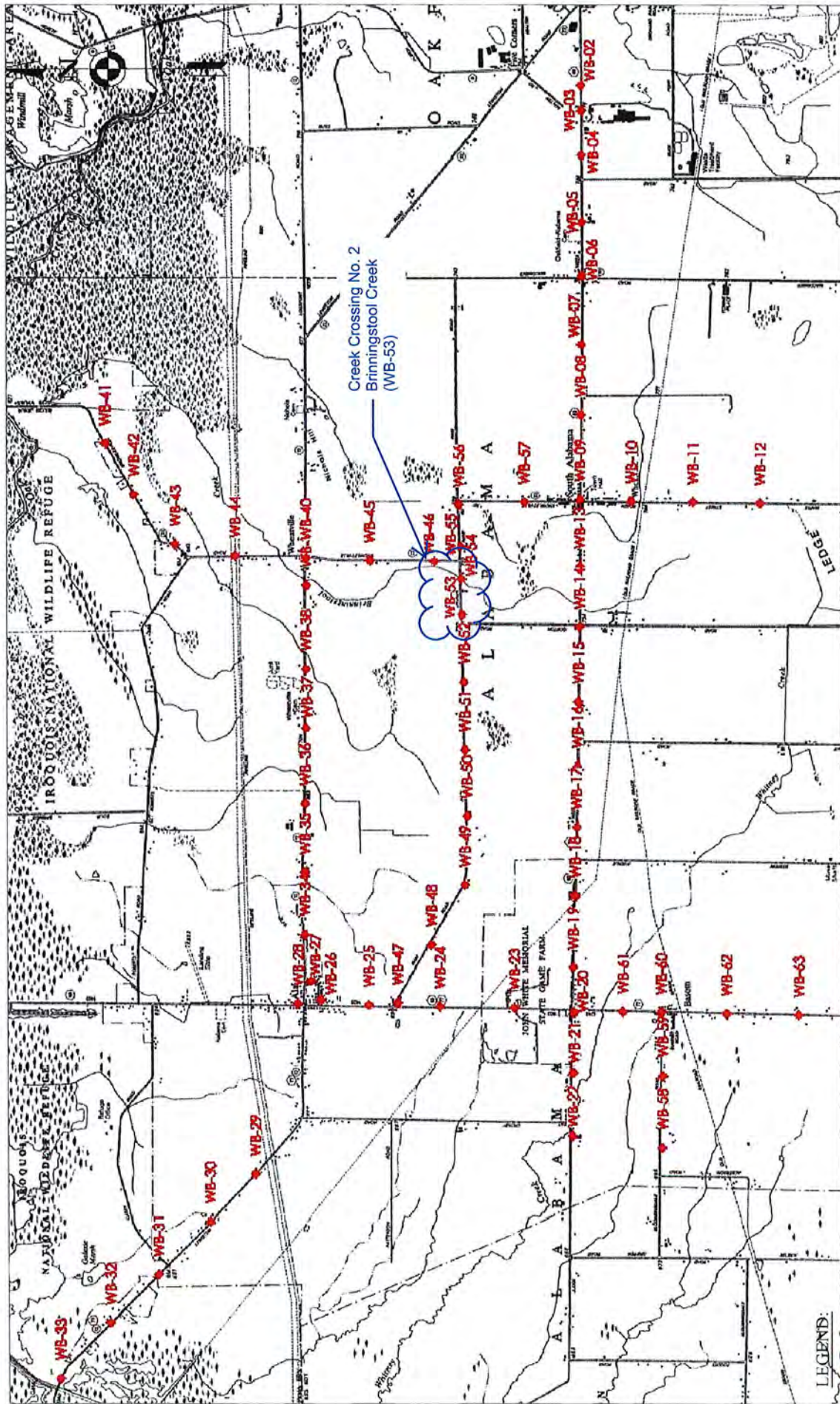
N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: K. FULLER

DRILL RIG TYPE: CME-550

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS



WB-1 ◆ INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING.



MEDINA SANITARY SEWER FORCE MAIN
GENESEE COUNTY
MEDINA, NEW YORK

NOTE: FIGURE DEVELOPED FROM AS DRILLED LOCATIONS

SUBSURFACE EXPLORATION PLAN

DR BY: GG

PROJECT #: BD-16-041-B

CHKD BY: GG

DATE: 6/02/16

FIGURE NO: 1

HOLE NO.	WB-53
SURF. ELEV	
G.W. DEPTH	See Notes

PROJECT:	OAKFIELD-ALABAMA TRANSMISSION MAIN	LOCATION:	ALABAMA, NY
PROJ. NO.:	BD-16-041-B		GENESEE COUNTY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N			
5	1	3	3				Dark Brown f-m SAND, some Silt, tr.organics (moist, FILL)	
		3	3		6			
	2	3	3				Brown Silty CLAY, little f-c Sand, tr.gravel, tr.organics (moist-wet, FILL)	
		3	3		6			
	3	5	7				Brown f-c SAND and Silty CLAY, little fine Gravel (moist, firm, SC-SM)	
		12	13		19			
	4	13	15				Brown Silty CLAY, some f-c Sand, little f-c Gravel (moist, v.stiff, CL)	
		15	12		30			
10							Boring Complete at 8.0'	No Free Standing Water encountered at Boring Completion
20								

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: K. FULLER

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 5/6/2016
FINISH 5/6/2016
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG



HOLE NO. WB-54
SURF. ELEV. _____
G.W. DEPTH See Notes

PROJECT: OAKFIELD-ALABAMA TRANSMISSION MAIN LOCATION: ALABAMA, NY
PROJ. NO.: BD-16-041-B GENESEE COUNTY

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER					SOIL OR ROCK CLASSIFICATION	NOTES
		0/6	6/12	12/18	N			
5	1	3	6				Gray f-c SAND, some f-c Gravel (moist, FILL)	
		6	4		12			
	2	4	4				Contains tr.organics	
		4	4		8			
	3	4	4				Brown f-c SAND, some Silty Clay, tr.gravel, tr.asphalt (moist, FILL)	
		5	5		9			
	4	3	6				Brown Silty CLAY, little f-c Sand, tr.organics (moist, stiff, CL)	
		6	8		12			
10							Boring Complete at 8.0'	No Free Standing Water encountered at Boring Completion
15								
20								

N = NO BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW CLASSIFIED BY Geologist
 DRILLER K. FULLER DRILL RIG TYPE: CME-550X
 METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

Soil Map—Genesee County, New York



Soil Map may not be valid at this scale.

Map Scale: 1:1,330 if printed on A portrait (8.5" x 11") sheet.

0 15 30 60 90 Meters

0 50 100 200 300 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

3/13/2024
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)		Area of Interest (AOI)		Spoil Area	
Soils		Soil Map Unit Polygons		Stony Spot	
		Soil Map Unit Lines		Very Stony Spot	
		Soil Map Unit Points		Wet Spot	
Special Point Features		Water Features		Other	
		Streams and Canals		Special Line Features	
		Transportation			
		Rails			
		Interstate Highways			
		US Routes			
		Major Roads			
		Local Roads			
		Background			
		Aerial Photography			
					
					
					
					
					
					
					

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Genesee County, New York
Survey Area Data: Version 24, Sep 5, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Oct 18, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CeC	Cazenovia silt loam, 8 to 15 percent slopes	0.7	7.3%
HIB	Hilton loam, 3 to 8 percent slopes	0.0	0.4%
LmB	Lima silt loam, 3 to 8 percent slopes	3.1	33.0%
OnC	Ontario loam, 8 to 15 percent slopes	0.8	8.6%
OvB	Ovid silt loam, 3 to 8 percent slopes	1.8	18.4%
Wy	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	3.1	32.3%
Totals for Area of Interest		9.5	100.0%

Genesee County, New York

Wy—Wayland soils complex, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2srgv

Elevation: 160 to 1,970 feet

Mean annual precipitation: 31 to 68 inches

Mean annual air temperature: 43 to 52 degrees F

Frost-free period: 105 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Wayland and similar soils: 60 percent

Wayland, very poorly drained, and similar soils: 30 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wayland

Setting

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 6 inches: silt loam

Bg1 - 6 to 12 inches: silt loam

Bg2 - 12 to 18 inches: silt loam

C1 - 18 to 46 inches: silt loam

C2 - 46 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: About 0 to 6 inches

Frequency of flooding: Frequent

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Very high (about 12.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: B/D

Ecological site: F139XY009OH - Wet Floodplain

Hydric soil rating: Yes

Description of Wayland, Very Poorly Drained

Setting

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Silty and clayey alluvium derived from interbedded sedimentary rock

Typical profile

A - 0 to 6 inches: mucky silt loam

Bg1 - 6 to 12 inches: silt loam

Bg2 - 12 to 18 inches: silt loam

C1 - 18 to 46 inches: silt loam

C2 - 46 to 72 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: Frequent

Frequency of ponding: Frequent

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Very high (about 12.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: B/D

Ecological site: F139XY009OH - Wet Floodplain

Hydric soil rating: Yes

Minor Components

Wakeville

Percent of map unit: 10 percent

Landform: Flood plains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Talf

Down-slope shape: Concave

Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Genesee County, New York
Survey Area Data: Version 24, Sep 5, 2023

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DECinfo Locator

Base Map: Topographical [Help](#)

- Search
- Tools
- DEC Information Layers
- Permits and Registration
- Environmental Cleanup
- Environmental Monitoring
- Public Involvement
- Environmental Sensitive Areas
- Legal Information
- Reference Layers



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

(1) County Genesee(2) Town Alabama

DEC 14 2004



(3) DEC Well Number

GS576

WELL COMPLETION REPORT

(4) OWNER <u>Terry Downs</u>		LOG *	
(5) ADDRESS <u>6815 Knowlesville Rd. Oakfield, NY 14125</u>		Ground Surface EL. _____ ft. above sea level	
(6) LOCATION OF WELL (See Instructions On Reverse) Show Lat/Long if available and method used: ☒ GPS ☐ DEC Website ☐ Map Interpolation <u>N43° 05.015'</u> <u>W078° 20.077'</u>		Top Of Casing is located <u>2'6" +</u> ft. above (+) or below (-) ground surface	
(7) DEPTH OF WELL BELOW LAND SURFACE (Feet) <u>45</u>	(8) DEPTH TO GROUNDWATER BELOW LAND SURFACE (Feet) <u>32</u>	DATE MEASURED <u>10-30-04</u>	
CASINGS			
(9) DIAMETER <u>6</u> in. in.			
(10) LENGTH <u>29</u> ft. in.			
(11) GROUT TYPE / SEALING		(12) GROUT / SEALING INTERVAL FROM _____ TO _____	
SCREENS			
(13) MAKE & MATERIAL		(14) OPENINGS	
(15) DIAMETER in. in.			
(16) LENGTH ft. in.			
(17) DEPTH TO TOP OF SCREEN, FROM TOP OF CASING (Feet)			
YIELD TEST			
(18) DATE <u>10-29-04</u>		(19) DURATION OF TEST <u>30 min.</u>	
(20) LIFT METHOD ☒ Pump ☐ Air Lift ☐ Ball		(21) STABILIZED DISCHARGE (GPM) <u>17</u>	
(22) STATIC LEVEL PRIOR TO TEST (feet/inches below top of casing) <u>34'</u>		(23) MAXIMUM DRAWDOWN (Stabilized) (feet/inches below top of casing) <u>39'</u>	
(24) RECOVERY (Time in hours/minutes) <u>10 min.</u>		(25) Was the water produced during test discharged away from immediate area? Yes ☒ No _____	
PUMP INSTALLATION			
(26) PUMP INSTALLED? YES ☒ NO _____		(27) DATE <u>11/1/04</u>	
(28) PUMP INSTALLER <u>Zachary Atwell</u>		(29) TYPE <u>Submersible</u>	
(30) MAKE <u>Goulds</u>		(31) MODEL	
(32) MAXIMUM CAPACITY (GPM) <u>10</u>		(33) PUMP INSTALLATION LEVEL FROM TOP OF CASING (Feet) <u>45</u>	
(34) METHOD OF DRILLING ☐ Rotary ☒ Cable Tool ☐ Other _____		(35) USE OF WATER (see instructions for choices) <u>Domestic</u>	
(36) DATE DRILLING WORK STARTED <u>10-28-04</u>		(37) DATE DRILLING WORK COMPLETED <u>10-30-04</u>	
(38) DATE REPORT FILED <u>11/1/04</u>		(39) DRILLER & COMPANY <u>Zachary Atwell Atwell Water Well Service</u>	
(40) DEC REGISTRATION NO. <u>10139</u>			
* Show log of geologic materials encountered with depth below ground surface, water bearing beds and water levels in each; casings; screens; pump; additional pumping tests and other matters of interest, e.g., water quality (sulphur, salt, methane). Describe repair work. Attach separate sheet if necessary.			
TOP OF WELL 0' Brown Clay 4' → Colorful Gravel 26' → ← casing shoe Consolidated limestone 45' → BOTTOM OF HOLE NYSDEC COPY			

See further instructions titled "Instructions for New York State Well Completion Report".

(1) COUNTY Genesee(2) TOWN Alabama

(3) DEC Well Number

GS1163

WATER WELL COMPLETION REPORT

(4) OWNER Olin Mills		(43) LOG Depth to Bedrock <u>38</u> (ft. below ground surface) Ground Elev. <u>717</u> (ft. above S.L.) Top of Casing <u>2 ft +</u> (ft. above (+) or below (-) ground surface)
(5) ADDRESS 1801 Ham Road Basom, NY 14013		
(6) LOCATION OF WELL (See instructions on reverse) (Check one ☐ if same as address above, also provide Lot & Long below) Serve Location (if available) and record used 1801 Ham Rd • GPS ☐ Map description N43°5.018' W78°21.548'		
(7) DEPTH OF WELL BELOW GROUND SURFACE (feet) 50		
(8) DEPTH TO GROUNDWATER BELOW GROUND SURFACE (feet) 32		TOP OF WELL Brown Sand & Angular Gravel 10 Gray Clay 17 Limestone 18 Soft Gray Shale 38 Hard Gray Shale 50 50 BOTTOM OF HOLE NYSDEC COPY
(9) DIAMETER 6 in.		
(10) LENGTH 38 ft.		
(11) GROUT TYPE / SEALING (See instructions on reverse)		
(12) GROUT / SEALING MATERIAL FROM 0 TO 19		
(13) MAKE & MATERIAL N/A		
(14) DIAMETER in.		
(15) LENGTH ft.		
(16) DEPTH TO TOP OF SCREEN FROM TOP OF CASING (feet)		
(17) YIELD TEST		
(18) DATE 9/18/13		
(19) EVALUATION OF TEST 4 HOURS		
(20) TEST METHOD ☐ Pump ☒ Air Lift ☐ Other		
(21) STABILIZED DISCHARGE (GPM) 12		
(22) STATIC LEVEL PRIOR TO TEST (feet below top of casing) 32		
(23) MAXIMUM DRAWDOWN (feet below top of casing)		
(24) RECOVERY (Time in hours/minutes)		
(25) Was the water produced during the test discharged away from immediate area? YES ☒ NO ☐		
(26) PUMP INSTALLED? YES ☐ NO ☒		
(27) DATE		
(28) PUMP INSTALLER		
(29) TYPE		
(30) MAKE		
(31) MODEL		
(32) MAXIMUM CAPACITY (GPM)		
(33) PUMP INSTALLATION LEVEL FROM TOP OF CASING (feet) 45		
(34) METHOD OF DRILLING • Rotary ☐ Cable Tool ☐ CPM ☐		
(35) USE OF WATER (See instructions on reverse) Residential		
(36) DATE DRILLING WORK COMPLETED 9/18/13		
(37) DATE DRILLING WORK COMPLETED 9/18/13		
(38) DATE REPORT FILED 9/25/13		
(39) REGISTERED COMPANY Willey Well Drilling, Inc		
(40) DEC REGISTRATION NO. NYRD 10408		
(41) CERTIFIED DRILLER (Print name) Chad Ellis		
(42) CERTIFIED DRILLER SIGNATURE <i>Chad Ellis</i>		
* By signing this document I hereby affirm that: (1) I am certified to supervise water well drilling activities as defined by Environmental Conservation Law §15-1502; (2) this water well was constructed in accordance with water well standards promulgated by the New York State Department of Health; (3) under the penalty of perjury the information provided in this Well Completion Report is true, accurate and complete, and I understand that any false statement made herein is punishable as a class A Misdemeanor under Penal Law §210.45.		

LOCATION SKETCH - Indicate north

W

* Ham Rd

Spanton Rd

Kromesville Rd

S

E

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DECinfo Locator

Base Map: Topographical

[? Help](#)

Search

Tools

DEC
Information
Layers

Environment

Permits and
Registrations

Environment
Cleanup

Environment
Monitoring

Public
Involvement

Environment
Sensitive
Areas

Legal
Information

Reference
Layers



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

(1) County Genesee
(2) Township OAKfield

(3) DEC Well Number

GS-357

WELL COMPLETION REPORT

(4) OWNER <u>Gary Wadum</u>		LOG *	
(5) ADDRESS <u>con-</u> <u>Fry & Maltby</u> <u>OAKfield</u>		Ground Surface EL. _____ ft. above sea level	
(6) LOCATION OF WELL (See Instructions On Reverse) Show Lat/Long if available and method used: ☒ GPS ☐ DEC Website ☐ Map Interpolation <u>N 43° 04.811'</u> <u>W 098° 15.095'</u>		Top Of Casing is located <u>+2'</u> ft. above (+) or below (-) ground surface	
(7) DEPTH OF WELL BELOW LAND SURFACE (Feet) <u>65'</u>	(8) DEPTH TO GROUNDWATER BELOW LAND SURFACE (Feet) <u>91'</u>	DATE MEASURED <u>9-01</u>	
CASINGS			
(9) DIAMETER <u>6"</u> in. in. in. in.			
(10) LENGTH <u>47 1/2'</u> ft. ft. ft. in.			
(11) GROUT TYPE / SEALING		(12) GROUT / SEALING INTERVAL (Feet) FROM _____ TO _____	
SCREENS			
(13) MAKE & MATERIAL		(14) OPENINGS	
(15) DIAMETER in. in. in. in.			
(16) LENGTH ft. ft. ft. in.			
(17) DEPTH TO TOP OF SCREEN, FROM TOP OF CASING (Feet)			
WELL TEST			
(18) DATE <u>9-01</u>		(19) DURATION OF TEST <u>60 min-</u>	
(20) LIFT METHOD ☐ Pump ☒ Air Lift ☐ Bail		(21) STABILIZED DISCHARGE (GPM) <u>20 gpm</u>	
(22) STATIC LEVEL PRIOR TO TEST (feet/inches below top of casing) <u>43'</u>		(23) MAXIMUM DRAWDOWN (Stabilized) (feet/inches below top of casing)	
(24) RECOVERY (Time in hours/minutes)		(25) Was the water produced during test discharged away from immediate area? Yes ☐ No ☒	
PUMP INSTALLATION			
(26) PUMP INSTALLED? YES ☐ NO ☒		(27) DATE	
(28) PUMP INSTALLER		(29) TYPE	
(30) MAKE		(31) MODEL	
(32) MAXIMUM CAPACITY (GPM)		(33) PUMP INSTALLATION LEVEL FROM TOP OF CASING (Feet)	
(34) METHOD OF DRILLING ☒ Rotary ☐ Cable Tool ☐ Other _____		(35) USE OF WATER (see Instructions for choices) <u>Domestic</u>	
(36) DATE DRILLING WORK STARTED <u>9-01</u>		(37) DATE DRILLING WORK COMPLETED	
(38) DATE REPORT FILED <u>9-23-02</u>		(39) DRILLER & COMPANY <u>ATWELL W.V.S.</u>	
(40) DEC REGISTRATION NO. <u>10139</u>			
* Show log of geologic materials encountered with depth below ground surface, water bearing beds and water levels in each; casings; screens; pump; additional pumping tests and other matters of interest, e.g., water quality (sulphur, salt, methane). Describe repair work. Attach separate sheet if necessary. See further instructions titled "Instructions for New York State Well Completion Report".			
		67' BOTTOM OF HOLE	
NYSDEC COPY			

LOCATION SKETCH - Indicate north

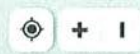
(1) COUNTY Genesee(2) TOWN Oakfield

(3) DEC Well Number

GS 741

WATER WELL COMPLETION REPORT

(4) OWNER <u>LAMB FARMS INC</u>		(43) LOG
(5) ADDRESS <u>6880 Albion Rd Oakfield, NY 14175</u>		Ground Surface EL. _____ ft. above sea level
(8) LOCATION OF WELL (See Instructions On Reverse) Show Lat/Long if available and method used: <u>3015 MA Hwy rd</u> ☒ GPS ☐ Map Interpolation <u>4304 872-N</u> <u>7816 727-W</u>		Top Of Casing is located <u>1 1/2'</u> ft. above (+) or below (-) ground surface
(7) DEPTH OF WELL BELOW LAND SURFACE (feet) <u>45</u>	(8) DEPTH TO GROUNDWATER BELOW LAND SURFACE (feet) <u>18'</u>	DATE MEASURED <u>8-31-07</u>
CASINGS		
(9) DIAMETER <u>6 in.</u>	in. in. in. in.	TOP OF WELL 0 Brown clay Some SAND & pebbles 16 GRAY clay 18 GRAY shale Med 45 H ₂ O good
(10) LENGTH <u>28' 16"</u>	ft. ft. in.	
(11) GROUT TYPE / SEALING <u>Cement</u>	(12) GROUT / SEALING INTERVAL (feet) FROM <u>0</u> TO <u>10</u>	
SCREENS		
(13) MAKE & MATERIAL	(14) OPENINGS	
(15) DIAMETER in. in. in. in.		
(16) LENGTH ft. ft. ft. in.		
(17) DEPTH TO TOP OF SCREEN, FROM TOP OF CASING (Feet)		
YIELD TEST		
(18) DATE <u>8-31-07</u>	(19) DURATION OF TEST <u>1 hr</u>	
(20) LIFT METHOD ☐ Pump ☐ Air Lift ☒ Ball	(21) STABILIZED DISCHARGE (GPM) <u>5</u>	
(22) STATIC LEVEL PRIOR TO TEST (feet/inches below top of casing) <u>196'</u>	(23) MAXIMUM DRAWDOWN (Stabilized) (feet/inches below top of casing) <u>32'</u>	
(24) RECOVERY (Time in hours/minutes) <u>1 hr 10 min</u>	(25) Was the water produced during the test discharged away from immediate area? Yes ☒ No ☐	
PUMP INSTALLATION		
(26) PUMP INSTALLED? YES _____ NO ☒	(27) DATE	(28) PUMP INSTALLER
(29) TYPE	(30) MAKE	(31) MODEL
(32) MAXIMUM CAPACITY (GPM)	(33) PUMP INSTALLATION LEVEL FROM TOP OF CASING (Feet)	
METHOD OF DRILLING		
(34) METHOD OF DRILLING ☐ Rotary ☒ Cable Tool ☐ Other _____	(35) USE OF WATER (See instructions for choices) <u>Domestic</u>	
(36) DATE DRILLING WORK STARTED <u>8-25-07</u>	(37) DATE DRILLING WORK COMPLETED <u>8-31-07</u>	
(38) DATE REPORT FILED <u>2-5-08</u>	(39) REGISTERED COMPANY <u>Browns Well Drilling</u>	(40) DEC REGISTRATION NO. <u>NYRD 10274</u>
(41) CERTIFIED DRILLER (Print name) <u>Doug</u>	(42) CERTIFIED DRILLER SIGNATURE <u>[Signature]</u>	
* By signing this document, I hereby affirm that: (1) I am certified to supervise water well drilling activities as defined by Environmental Conservation Law §15-1502; (2) this water well was constructed in accordance with water well standards promulgated by the New York State Department of Health; (3) under the penalty of perjury the information provided in this Well Completion Report is true, accurate and complete, and I understand that any false statement made herein is punishable as a class A Misdemeanor under Penal Law §210.45.		
		BOTTOM OF HOLE
		NYSDEC COPY



16

Maitby Rd

North Pearl Rd
Creek Crossing

16

Maitby Rd

N Pearl Rd

Oakfield Rod
and Gun club

Oakfield-Alabama
Baseball Field

Oakfield-Alabama
Central School District

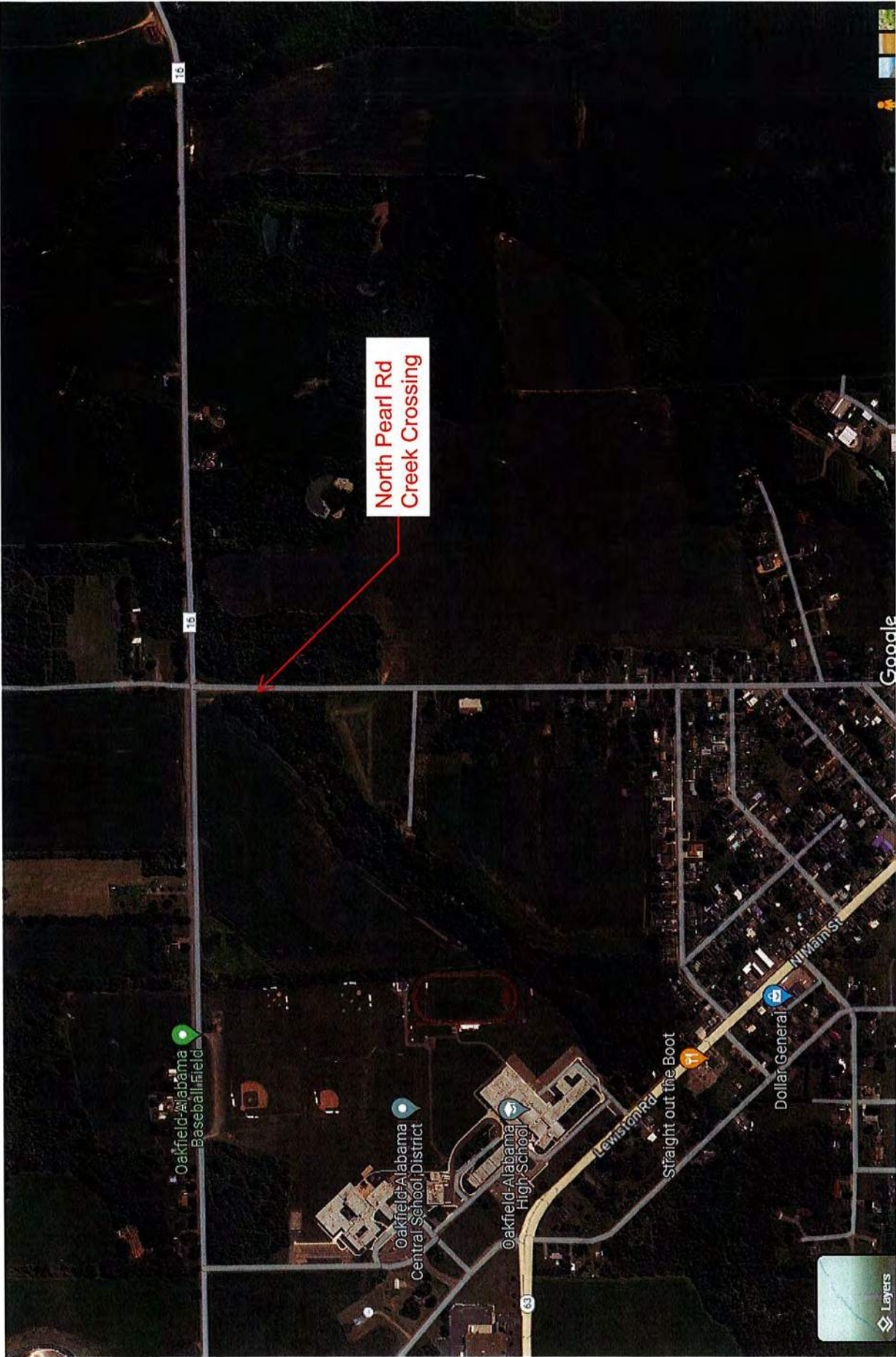
Oakfield-Alabama
High School

Park Ave

Lewiston Rd

53





North Pearl Rd
Creek Crossing

Oakfield-Alabama
Baseball Field

Oakfield-Alabama
Central School District

Oakfield-Alabama
High School

Lewiston Rd
Straight out the Boot

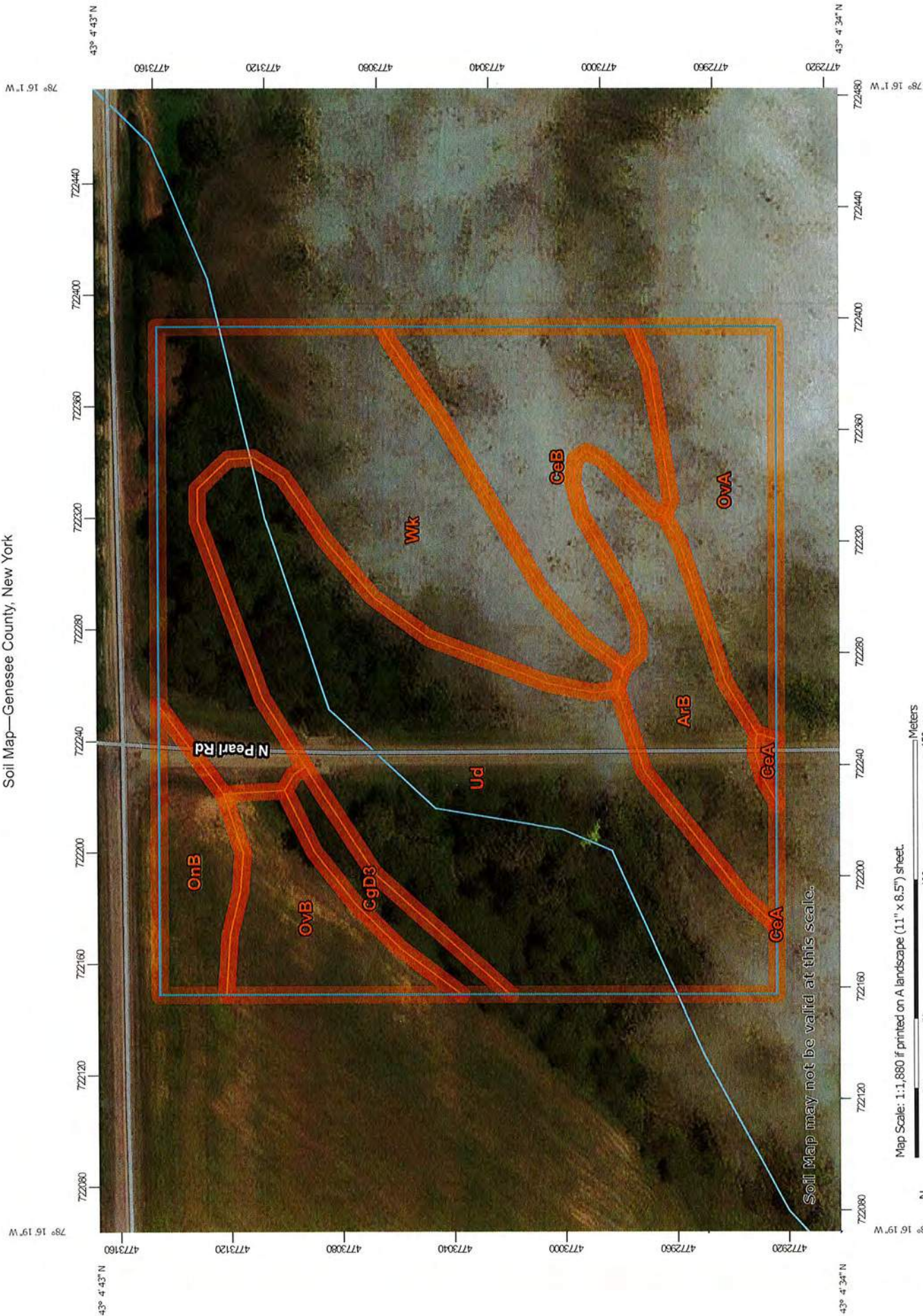
Dollar General

Mam St

Layers

Google

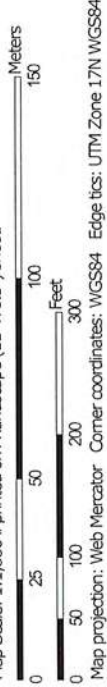
Soil Map—Genesee County, New York



Soil Map may not be valid at this scale.

Map Scale: 1:1,680 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)	 Area of Interest (AOI)	 Spoil Area
Soils	 Soil Map Unit Polygons	 Stony Spot
	 Soil Map Unit Lines	 Very Stony Spot
	 Soil Map Unit Points	 Wet Spot
Special Point Features		 Other
 Blowout		 Special Line Features
 Borrow Pit	Water Features	
 Clay Spot	 Streams and Canals	
 Closed Depression	Transportation	
 Gravel Pit	 Rails	
 Gravelly Spot	 Interstate Highways	
 Landfill	 US Routes	
 Lava Flow	 Major Roads	
 Marsh or swamp	 Local Roads	
 Mine or Quarry	Background	
 Miscellaneous Water	 Aerial Photography	
 Perennial Water		
 Rock Outcrop		
 Saline Spot		
 Sandy Spot		
 Severely Eroded Spot		
 Sinkhole		
 Slide or Slip		
 Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Genesee County, New York
Survey Area Data: Version 24, Sep 5, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Oct 18, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ArB	Arkport very fine sandy loam, 1 to 6 percent slopes	1.2	9.0%
CeA	Cazenovia silt loam, 0 to 3 percent slopes	0.0	0.2%
CeB	Cazenovia silt loam, 3 to 8 percent slopes	1.5	11.6%
CgD3	Cazenovia silty clay loam, 15 to 25 percent slopes, eroded	0.3	2.5%
OnB	Ontario loam, 3 to 8 percent slopes	0.6	4.3%
OvA	Ovid silt loam, 0 to 3 percent slopes	1.2	9.1%
OvB	Ovid silt loam, 3 to 8 percent slopes	0.8	6.0%
Ud	Udfluvents and Fluvaquents, frequently flooded	4.4	33.2%
Wk	Wakeville silt loam	3.1	23.9%
Totals for Area of Interest		13.2	100.0%

Genesee County, New York

Ud—Udifluvents and Fluvaquents, frequently flooded

Map Unit Setting

National map unit symbol: p5vc

Elevation: 100 to 3,000 feet

Mean annual precipitation: 31 to 38 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 140 to 175 days

Farmland classification: Not prime farmland

Map Unit Composition

Udifluvents and similar soils: 40 percent

Fluvaquents and similar soils: 35 percent

Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udifluvents

Setting

Landform: Flood plains

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Talf

Down-slope shape: Concave

Across-slope shape: Convex

Parent material: Alluvium with a wide range of texture

Typical profile

H1 - 0 to 9 inches: gravelly silt loam

H2 - 9 to 72 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to high (0.06 to 1.98 in/hr)

Depth to water table: About 18 to 48 inches

Frequency of flooding: Frequent

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: C

Ecological site: F101XY002NY - Low Floodplain

Hydric soil rating: No

Description of Fluvaquents

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium with highly variable texture

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 72 inches: very gravelly silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F101XY003NY - Low Floodplain Depression
Hydric soil rating: Yes

Minor Components

Middlebury

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Wayland

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Wyalusing

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Canandaigua

Percent of map unit: 5 percent

Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Genesee County, New York

Survey Area Data: Version 24, Sep 5, 2023

Genesee County, New York

Wk—Wakeville silt loam

Map Unit Setting

National map unit symbol: p8yc
Elevation: 750 to 1,740 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 140 to 175 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Wakeville and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wakeville

Setting

Landform: Flood plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty alluvium washed from areas of glacial drift derived mainly from shale, siltstone, and sandstone, with some limestone

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 41 inches: silt loam
H3 - 41 to 72 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F101XY002NY - Low Floodplain

Hydric soil rating: No

Minor Components

Unnamed soils

Percent of map unit: 10 percent

Hydric soil rating: No

Wayland

Percent of map unit: 5 percent

Landform: Flood plains

Hydric soil rating: Yes

Teel

Percent of map unit: 5 percent

Hydric soil rating: No

Udifluvents

Percent of map unit: 5 percent

Hydric soil rating: No

Fluvaquents

Percent of map unit: 5 percent

Landform: Flood plains

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Genesee County, New York

Survey Area Data: Version 24, Sep 5, 2023



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
Email Address: fw5es_nyfo@fws.gov

In Reply Refer To:
Project Code: 2024-0056750
Project Name: STAMP Oakfield Force Main

March 01, 2024

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)).



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
Email Address: fw5es_nyfo@fws.gov

In Reply Refer To:
Project code: 2024-0056750
Project Name: STAMP Oakfield Force Main

March 01, 2024

Federal Action Agency (if applicable): Army Corps of Engineers

Subject: Record of project representative's no effect determination for 'STAMP Oakfield Force Main'

Dear Katlyn Hojnacki:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on March 01, 2024, for 'STAMP Oakfield Force Main' (here forward, Project). This project has been assigned Project Code 2024-0056750 and all future correspondence should clearly reference this number. **Please carefully review this letter.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis, your project has reached the determination of "No Effect" on the northern long-eared bat. To make a no effect determination, the full scope of the proposed project implementation (action) should not have any effects (either positive or negative), to a federally listed species or designated critical habitat. Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed

action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See § 402.17).

Under Section 7 of the ESA, if a federal action agency makes a no effect determination, no consultation with the Service is required (ESA §7). If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required except when the Service concurs, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat [50 CFR §402.02, 50 CFR§402.13].

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Candidate

You may coordinate with our Office to determine whether the Action may affect the animal species listed above and, if so, how they may be affected.

Next Steps

Based upon your IPaC submission, your project has reached the determination of “No Effect” on the northern long-eared bat. If there are no updates on listed species, no further consultation/coordination for this project is required with respect to the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place to ensure compliance with the Act.

If you have any questions regarding this letter or need further assistance, please contact the New York Ecological Services Field Office and reference Project Code 2024-0056750 associated with this Project.

Action Description

You provided to IPaC the following name and description for the subject Action.

1. Name

STAMP Oakfield Force Main

2. Description

The following description was provided for the project 'STAMP Oakfield Force Main':

Installation of a sanitary sewer force main from the Science, Technology, and Advanced Manufacturing Park (STAMP) in the Town of Alabama to the Village of Oakfield Wastewater Treatment Facility. Work would occur within the existing road right-of-way.

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@43.081882199999995,-78.29374023874291,14z>



DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the Endangered northern long-eared bat (*Myotis septentrionalis*). Therefore, no consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required for those species.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

No

2. The proposed action does not intersect an area where the northern long-eared bat is likely to occur, based on the information available to U.S. Fish and Wildlife Service as of the most recent update of this key. If you have data that indicates that northern long-eared bats are likely to be present in the action area, answer "NO" and continue through the key.

Do you want to make a no effect determination?

Yes

PROJECT QUESTIONNAIRE

IPAC USER CONTACT INFORMATION

Agency: CC Environment & Planning
Name: Katlyn Hojnacki
Address: 23 Jackson Street
City: Batavia
State: NY
Zip: 14020
Email: khojnacki@ccenvironment.com
Phone: 5852194030

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Stream Name]	847-690, 847-687
E.2.h.iv [Surface Water Features - Stream Classification]	C
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.2.j. [100 Year Floodplain]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.

E.2.k. [500 Year Floodplain]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	Yes
E.2.o. [Endangered or Threatened Species - Name]	Northern Harrier, Short-eared Owl, Sedge Wren
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	Yes
E.3.a. [Agricultural District]	GENE002
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

Appendix O

Letter of Intent between Village of Oakfield, GCEDC, & STAMP Sewer Works, Inc.

April 16, 2024

VIA EMAIL

The Honorable David Boyle
Mayor, Village of Oakfield
39 Main Street
Oakfield New York 14125

Re: Development of Western New York Science & Technology Advanced Manufacturing Park ("STAMP") Wastewater Services, located on approximately 1,250 Acres Located in the Town of Alabama, New York located along the west side of New York State Highway 77/63 (north of Judge Road) approximately five miles north of the I-90/New York State Thruway (the "STAMP Site")

Dear Mayor Boyle:

Please allow this letter of intent ("LOI") to summarize some of the key terms upon which the Village of Oakfield, with offices at 37 Main Street Oakfield, New York 14125 ("Village") on behalf of the Village Trustees, the Genesee County Economic Development Center ("GCEDC"), an industrial development agency formed under Section 18-A of the New York State General Municipal Law, and STAMP Sewer Works, Inc. ("SSW"), a domestic transportation corporation, SSW together with GCEDC with offices located at 99 MedTech Drive, Suite 106, Batavia, New York 14020, (collectively as the "Parties" and individually as a "Party") would be willing to work together on the possible design, construction and operation of a new force main sewer line from the STAMP Site to the Village of Oakfield Waste Water Treatment Facility ("Oakfield WWTF") to provide wastewater treatment services to STAMP.

Please note, this LOI constitutes a non-binding expression of intent by the Parties and any final and binding agreements shall be subject to the preparation, negotiation and execution of definitive binding legal documents (hereinafter called the "Definitive Agreement"). Subject to the foregoing limitations, it is the Parties' intention that the Definitive Agreement will contain the following terms and conditions:

1. Plan. SSW currently intends to build an wastewater treatment plant at the STAMP Site and associated force main to discharge post-treated sanitary effluent and post-treated process water to Oak Orchard Creek in the Town of Shelby. For various reasons, GCEDC and SSW are exploring other solutions to provide permanent wastewater treatment services to the first two tenants at STAMP, one of whom is currently under construction and the other of whom is expected to start construction in the next few weeks. The Parties will explore and work together on the possible design, construction and operation of a new force main sewer line (the "Sewer Line") to facilitate the transport of wastewater from the STAMP Site for treatment at the Oakfield WWTF prior to discharge (the "Project").

2. Sewer Route. The GCEDC and SSW will work together with the Village to evaluate and present routing options for the Sewer Line. After consultation, the GCEDC and SSW will present a preferred route of the Sewer Line to the Village, upon which GCEDC and SSW and the Village will work to finalize the route of the Sewer Line.
3. Oakfield WWTF Initial Allocation of Treatment Capacity to STAMP. The Village will reserve an initial treatment capacity of twenty thousand (20,000) gallons per day within the Oakfield WWTF for current and future tenants at the STAMP Site. The Parties will work together to confirm that the Oakfield WWTF has sufficient existing capacity to handle the initial treatment capacity without substantial upgrades and undue additional stress to the Oakfield WWTF. To the extent upgrades or improvements are required, GCEDC and SSW shall be responsible for all costs associated with same and will pay the Village of Oakfield for invoices submitted within 30 days for reasonable engineering costs that the Village might incur relative to evaluating and/or making improvements to meet the initial treatment capacity.
4. Oakfield WWTF Future Allocation of Treatment Capacity to STAMP. The Parties will monitor and evaluate the overall capacity at the Oakfield WWTF and will work together to determine whether the Oakfield WWTF can provide additional treatment capacity to STAMP including any necessary additional improvements relative to same. To the extent upgrades or improvements are required, GCEDC and SSW shall be responsible for all costs associated with same and will pay the Village of Oakfield for invoices submitted within 30 days for reasonable engineering costs that the Village might incur relative to evaluating and/or making improvements to meet the initial treatment capacity.
5. Phosphorous Treatment. In connection with the proposed initial allocation of treatment capacity, GCEDC and SSW will propose to design and install, improvements to the WWTF to provide for facilities to reduce phosphorus levels in post-treated effluent. GCEDC and SSW shall be responsible for all costs associated with same and will pay the Village of Oakfield for invoices submitted within 30 days for reasonable engineering costs that the Village might incur relative to evaluating and/or making improvements to accommodate the phosphorus reduction.
6. Project Implementation; Ownership and Maintenance of the Sewer Line. The GCEDC and SSW will be responsible for implementing the Project. The Village will not have the ability to connect into the Sewer Line or otherwise utilize the Sewer Line to transport sewage to the Oakfield WWTF. The SSW will be responsible for maintaining the Sewer Line up to the point that the Sewer Line connects into the Oakfield WWTF system.
7. STAMP Service Agreement. In conjunction with the development of Definitive Agreements, SSW and the Village will enter into a service agreement to provide the STAMP Site with the wastewater treatment services contemplated under this LOI.
8. Consultation and Cooperation. The Parties will attend periodic meetings at mutually agreeable times to confer about the progress of the Parties' activities in connection to the Plan identified in Section 1 of this LOI. The Parties will cooperate with one another, in

good faith, to effectuate the Plan, and each Party will take such, and to execute and deliver to one another such documents, as one Party may reasonably request of the other, so as to carry out more effectively and completely the purposes of the Definitive Agreement. Each Party will bear its own costs in consulting and cooperating with the other.

9. Definitive Agreements Required. This LOI reflects the preliminary non-binding concepts with respect to certain terms. No Party will have any legal obligation arising out of this LOI or otherwise, to any other Party or any other person or entity by reason of this LOI or any other matter contemplated hereby or giving rise hereto, unless and until the parties execute Definitive Agreements and then only to the extent set forth in the Definitive Agreements. If so executed, the Definitive Agreements shall supersede the terms and conditions of this LOI to the extent therein provided, and will contain such terms, conditions, covenants, representations and warranties related to the matters contemplated under this LOI as the Parties may mutually agree upon. The Parties hereby acknowledge that the Definitive Agreements must make provision for a number of matters which are material to the matters contemplated under this LOI and to which the Parties have not yet agreed.
10. Not a Contract or an Option. This LOI shall not be deemed a contract or an option and shall not be binding on the Parties. The purpose of this LOI is to identify preliminary areas of agreement to enable the Parties to work together on the possible design, construction and operation of a new force main sewer line from the STAMP Site to the Oakfield WWTF to provide wastewater treatment services to STAMP and the preparation of a more complete document between the parties containing all of the terms of binding Definitive Agreements.
11. This LOI shall terminate at the earlier of April 15, 2025 or within Sixty (60) days after written notice by either party to terminate this LOI is received.

If the foregoing meets with your approval, kindly so signify by signing and returning the enclosed duplicate copy of this LOI, whereupon this LOI shall constitute a letter of intent between the Parties in accordance with the terms and provisions set forth above.

ACCEPTED AND AGREED TO:

Genesee County Economic Development Center

By: [Signature]
Name: Mark A. Moser
Title: SR VP of op
Date: 5/3, 2024

STAMP Sewer Works, Inc.

By: Paul J. Battaglia
Name: PAUL J. BATTAGLIA
Title: Vice Mayor
Date: May 9, 2024

The Village of Oakfield, New York

By: David T. Boyle
Name: David T. Boyle
Title: Mayor Village of Oakfield
Date: 4/16/24, 2024